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A PSYCHOMETRIC ANALYSIS OF
WELFARE WORKER CHARACTERISTICS

by

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A THESIS

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ABSTRACT

Welfare Workers were administered five psychological tests after having been rated by their supervisors as to overall suitability. Four hypotheses were tested concerned respectively with (1) the comparability of welfare workers' test scores with the scores of other "helping-professions", (2) the score differences between High-rated and Low-rated groups, (3) the significance of the multiple correlation calculated between predictor variables (scores) and the rating criterion, and (4) the fakability of the three non-cognitive tests. The data were analyzed separately for the two sexes.

Subjects consisted of the population of welfare workers employed with a large public welfare department. The "Major group" of 69 males and 76 females pertained to hypotheses (1), (2), and (3) while a smaller group of 20 males and 16 females ("Simulation group") were utilized in testing hypothesis (4). The tests used were: Valentine's Reasoning Test, Wonderlic Personnel Test, Maudsley Personality Inventory, California Psychological Inventory, and Strong Vocational Interest Blank.

All four hypotheses were supported for both male and

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groups, (3) the significance of the multiple correlation calculated between predictor variables (scores) and the

rating criterion, and (4) the relationship between cognitive

two sets

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female samples except hypothesis (2) for the female sample, for which the number of dimensions significantly discriminating the High-rated from the Low-rated groups was slightly less than the required fifty percent.

The intellectual, personality, and interest characteristics of the typical welfare worker, as well as of the high-rated and the low-rated workers, were described. Consideration of those variables most discriminating the high- from low-rated groups, and of those found to contribute most independently to the multiple regression equations, provided further definition to these groups.

In spite of the apparent fakability of the non-cognitive tests, both quantitative and "pattern" differences were noted between the High-rated and the Simulation groups' scores. Possible directions for further related research on this and the other findings were suggested.

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CHAPTER I

INTRODUCTION

1. GENERAL STATEMENT OF THE PROBLEM

The expanding welfare services being requested and supplied throughout much of the world today coupled with an annual graduation of qualified social workers that is below capacity (Kendall, 1957), has inevitably resulted in a serious shortage of professional staff (Albee and Dickey, 1957; Grygier, 1963; Oettinger, 1963). This is further aggravated by the administrative morass into which the more casework-oriented professional feels he or she is sinking (Leigh, 1963) and by the high attrition rate of this female-dominated profession (Watson, 1963a). Concern over the effective deployment of welfare personnel thus ranks among the most urgent priorities in the social welfare field. Opinion in Canada is becoming more widespread that "we must tackle seriously the idea of having more of the workload carried by personnel with less than professional qualifications" (Fisher, 1963). In areas without a school of social work there is little actual choice in the matter. Oettinger (1963) states that half of U.S. counties have no full-time trained welfare

staff while in the other half the percentage of workers with some training actually decreased from 51% in 1950 to 43% in 1960. In England, the Younghusband report recommended a new grade of "welfare assistant" to help alleviate the similar situation there (Nicholson, 1959). There is no reason to believe the situation is brighter in other countries. Hence unqualified welfare workers, to be distinguished from graduate social workers, form the bulk of welfare personnel and their numbers, of necessity, appear to be increasing.

This situation has resulted in increasing attention being focused upon the classification and differentiation of positions and tasks for the non-professional worker which would enable the development of more consistent in-service training programs and undergraduate social work education (Manson, 1963). Stress seems to be laid upon the most effective integration of task with skill or training. However, as pointed out by Gripton (1960), in-service training by itself apparently does not ensure a higher standard of service or predictable improvement in welfare worker competence. Presumably there is an optimal range of intellect for the responsibilities involved, pre-screening in terms of which should improve the position. However, the application of such

intelligence would prove even more fruitful according to Grygier (1956), if, in selection, cognizance is also taken of the personality characteristics most suited to the various interpersonal occupations; characteristics not elicited through training and often at a premium. The assessment of interests was thought by McCornack and Kidneigh (1954) to be of comparable importance in this regard.

Opinion held by administrators in these fields regarding the nature of such requisite qualities is apparently often intuitive, idiosyncratic, and biased by a priori convictions rooted in certain theories. Thus, in the social work profession, selection decisions are normally based upon assessments of applicants' levels of maturity, poise, empathy, discretion, etc. gained through "the interview technique" with heavy reliance on the "dynamic interrelationships" developed therein to provide clues to the above (Bishop, 1948; Berentgarten, 1949; Towle, 1952). The construct "relationship" as so frequently used in social work was concluded by Shively (1961) to be cloaked in ambiguity and its meaning to possess little or no reliability. An immersion in psychoanalytic theory appears to have resulted in a certain aversion to objective assessment methods in this profession. Sanua

(1963) points out that although other professional schools (law, medicine, engineering, etc.) utilize psychological tests to aid selection decisions, this has not been the case with social work.

To the extent that hiring decisions in welfare agencies are influenced by professionally-schooled administrators a similar orientation would likely also prevail in the selection of welfare workers. However, according to Newman (1961) there has been "little effort to define objectively the personal qualifications needed for social service" in any case, whether in psychoanalytic strongholds or otherwise. In view of the evidence against the efficacy of interview alone (Viteles, 1945; Guildford and Lacey, 1947; Kelly and Fiske, 1950; Zubin, 1957; Holt and Luborsky, 1958; Sydiaha, 1962) some alteration in this position would appear justified. The recent opinion of a prominent social welfare researcher that "the development of a selection battery (of tests) would be useful for both non-professional personnel and in candidate selection for graduate schools of social work" (Watson, 1963b) may represent a new view point in the profession. The utility of psychological tests in social work generally is further emphasized by Grygier (1963) who feels the use of more objective tools

to assess both client and worker characteristics would lead to more productive casework.

The problem with which the present study was therefore concerned was that of identifying, with the use of several group paper and pencil tests, some of the psychological variables (purportedly measured by such tests) which most characterize, respectively, a male and a female sample of public welfare workers. This is dealt with under Part A. The variables which best discriminate those workers given high ratings from those given low ratings on a suitability criterion were also sought and are dealt with in Part B. The type of variables identified by psychological tests were expected to afford, at least tentatively, more explicit bases for inter-subjective agreement and common frames of reference than more intuitive approaches when, for whatever reason, the attributes of this category of apparently socially adequate individual (who outnumber graduate social workers) are of concern. (e.g. in vocational counselling).

The possible application of information as found in Parts A and B for selection purposes requires that such tests possess adequate validity in terms of relevant external criteria and are insensitive to purposeful distortion. An

initial step (only) with respect to the former point was undertaken also in the present study in a multiple regression analysis of the test variables against the rating criterion (Part C). Studies estimating the fakability of personality and interest inventories, whether developed on rational, empirical, or forced-choice principles, are legion (see Chpt. II). However, as Dunnette et al (1958) state, in reference to a typical inventory, "the C.P.I., as an aid in the selection of applicants, will be enhanced with the continued accumulation of information on the effects of possible faking." The fakability of the non-cognitive tests used in the present study, in terms of the particular criterion herein concerned, was therefore also investigated, in Part D.

Findings throughout this study, although hopefully heuristic, should be considered tentative and will require refinement and cross-validation before conclusive statements of predictive validity regarding welfare workers should be made or generalized.

2. STATEMENT OF HYPOTHESES

The following refer equally and separately to the male and the female samples. With respect to Part A, a descriptive analysis of welfare workers, it was hypothesized that:

1

'welfare workers would achieve scores on the tests given comparable to other helping-professions but different, in many respects, from those of such as salesmen, scientists, and the socially inadequate, where such norms are available'. A more explicit hypothesis was not thought justified for this exploratory enquiry.

With respect to Part B, a discrimination of workers in terms of suitability, it was hypothesized that: 'the difference between test score means of those workers in the High-rated group and the Low-rated group would be significant on the majority of dimensions measured'.

With respect to Part C, the multiple regression analysis, it was hypothesized that: 'the multiple correlation between the ultimately selected predictor variables, as weighted in the regression equation, and the rating criterion would be significantly greater than zero'.

With respect to Part D, the fakability analysis, it was hypothesized that: 'the majority of Simulation group mean scores on those variables shown to discriminate the High/Low groups or included in the regression equation would either not differ significantly from, or would fall beyond (in the direction of suitability) the comparable High-rated

group mean scores'.

All above-mentioned groups are defined in Chapter III. The choice of "majority" for the hypotheses of Parts B and D, although admittedly somewhat arbitrary, allowed some basis for generalization of whatever conclusions were reached regarding, respectively, the relevance of the tests chosen and the fakability of their more discriminating variables, in the context of this study.

CHAPTER II

REVIEW OF THE LITERATURE

The present investigation is not particularly concerned with the more esoteric problems inherent in the separate topics of criterion analysis, rating procedures, personality theory, inventory validity, regression analysis, faking, personnel selection, social work, vocational interests, intelligence, etc. per se. Each of these could be probed in depth in conjunction with studies explicitly delimited to one such problem. The following review will therefore be consistent with the exploratory nature and format of the present study, incorporating certain marginal topics only as they pertain to the identification of welfare worker characteristics. For convenience however this discussion is divided into sections dealing with studies on "helping-professions", rating criteria, and inventory fakability.

1. STUDIES RELATING TO THE "HELPING-PROFESSIONS"

The majority of studies concerned with identifying attributes and improving selection methods of potentially suitable trainees in these fields have dealt with graduate students entering clinical psychology, psychiatry, public

health, and social work. To this writer's knowledge no psychometric studies have been reported involving untrained welfare workers, in spite of their increasing numbers and importance (see Introduction). Sanua (1963) remarks that "while lengthy investigations have been conducted with top level helping-professions, very little work has been published on the less prestigious 'helping-vocations' or sub-professional personnel". Of the latter there have been some studies on psychiatric aides, psychiatric nurses, and military social work aides. These and some of the above studies provide the more meaningful data for comparison with the present study.

Cliff, Newman, and Howell (1959) reviewed several studies seeking to identify successful psychiatric aide qualities and concluded that no predictive personality variables had yet been isolated; that ability tests were the only promising tool. One typical study (Cuadra and Reed, 1957) found the C.P.I. did not differentiate the better from less suitable aides and concluded that the criteria were either unrelated to personality variables or were over-shadowed by intellectual and experiential factors. A Ph.D study by Sidney (1957) similarly found no scales on either the Guildford-Zimmerman or Kuder to be predictive of psychiatric aide

proficiency.

Rosenburg et al (1962) found the average score on three intelligence tests more predictive of military social work aide course success than all C.P.I. scales except Self acceptance and Achievement by independence. These latter did however contribute something to a multiple regression equation while scales of the psychiatrically-oriented MMPI did not. Marin (1953), in a Ph.D. dissertation, reported no scales on the Bernreuter predicted graduate social work success although a correlation of .38 was obtained between grades and a combined score (social-emotional scales) on the Bell Adjustment Inventory. These two studies however did not utilize, as did those with psychiatric aides, practical proficiency as criterion. It would appear that in these interpersonal occupations academic success can, at times, be predicted by personality variables but actual performance, in which "the whole person" would be expected to be even more involved, is not.

This situation is further complicated by the findings of Goldstein (1960) and Sanua (1963) who gave graduate social work students an ability test (Miller's Analogy) to predict grades. Correlations were not significant however and for males and females were of different sign. Holt and Luborsky

(1958), studying post M.D. student selection for psychiatry training, found experts' opinion on the relationship between academic performance in medical school and later psychotherapy ability ranged from "considerable" to "none". Kelly and Fiske (1950) found the Miller correlated .47 with clinical psychology student grades but only .02 with therapy skills, the best correlation with the latter being a measure of extroversion. These studies have relevance because of the comparability of social casework and psychotherapy.

Sanua (1963) is of the opinion that projective techniques, by providing a measure of unconscious motivation, would improve prediction of suitability in personal contact occupations. Two Rorschach studies (Pietrowski, 1946; Frankle, 1951) found a significantly greater number of Movement responses given by the more proficient social work students than those of less ability. However the effect of intellectual differences was evidently not considered. Grygier (1956), who found a verbal I.Q. test more predictive of psychiatric nursing grades than psychoanalytically-based measures still feels such assessments are superior to social behaviour questionnaire approaches for such prediction.

Projective and psychoanalytic methods allegedly also

point out certain pathological factors, however inventory and life history data may be similarly oriented. Lewis (1947) found high Depression and Hysteria scores but low Hypochondriasis, Psychasthenia, and Schizophrenia scores for social workers on the MMPI. Sanua (1936) and Roe (to be published) found social workers above average in neuroticism on the MMPI and 16 PF tests respectively, especially the male workers. Roe attributed her findings to a high incidence of difficult early home environments in those who select social work, hypothesizing a search for more satisfying relationships. Berengarten (1940) reported similar findings with sibling rivalry, isolation, dependency, and parental conflicts characterizing their early environments. Nachman (1957) found social workers typically to have had dominant mother-figures and weak or no father-figures with a consequent feminine orientation to matters of discipline and empathy, in comparison to lawyers and dentists. There was also some deprivation in infancy. Tibble (1959) asked trainee social workers to express their main anxieties regarding their new roles and found "they were particularly concerned with their adequacy in human relations in unfamiliar social contexts".

Kidneigh and Lundberg (1958) compared test results of

social work students with students in other professional schools. Their major finding was that they were more liberal and less dogmatic than those in other schools, regarding political, social, family, and economic matters. They concluded this attitude allowed non-judgemental responses to clients, meeting dependency without control, and an acceptance of new problems. Examining biographical data they concluded neither age nor experience were important factors in social work student proficiency but noted that such students chose their vocation later in life than those in other professions.

Barthol and Kirk (1956), using the Concept Mastery, MMPI, and Strong tests, attempted to improve selection of graduate students for a public health diploma course. They found difficulty "in the determination of selection scores and profiles", possibly due in part to their failure to use a multiple regression technique. They found all the tests would screen out the poorer prospects but simultaneously eliminated too many of the good students. The Strong social services scales (Group V) were scored highly by all applicants, but were not discriminating. Only the verbal-linguistic scales (Group X) were positively related to success. None

were discriminating for the females although the Social Worker, Psychologist, and Lawyer scales approached significance.

Other interest studies by Lewis (1947), McCornack and Kidneigh (1954), and Gravitz and Mintz (1958) found social work students liked contact with people and verbal activities while disliking the manual trades, physical sciences, isolation, and the selling fields. On both the Strong and the Kuder the social services category was, not surprisingly, the most highly scored. These studies did not however report correlations with or predictability of criteria. Kelly and Fiske (1950) reported some significant prediction by Group I (creative-scientific) Strong scales with clinical psychology grades (.26) and clinical competence (.21). However Holt and Luborsky (1958) found the Strong gave largely negative results for prediction of suitability in psychiatry, although it is a closely allied helping-profession. Abeles (1958) however found interest differences to be more discriminating between trainee counselors given high and low global ratings by supervisors than ability or adjustment measures.

Findings in the above studies, even those with social workers, do not necessarily generalize to non-professional

welfare workers. Motivations may be different and the wider educational range of the latter could result in greater proficiency discrimination by various assessment procedures.

2. STUDIES RELATING TO RATING CRITERIA

Conflicting opinion exists regarding the reliability and validity of all rating procedures, whether peer, supervisory, or self; structured or unstructured; descriptive or numerical. Krause (1960) concluded "one type of rating is as good as another", but felt the concept was necessary and needing further exploratory research.

Subjective evaluation of overall performance may, state Prien and Liske (1962), be the only criterion available where that predicted is of a complex nature. Guion (1961) found sub-criterion measures (job-dimensions), even if known, to be often unrelated to total performance. Thus Topetzes (1956), who correlated occupational therapy training success with ratings on thirty apparently relevant traits, found uniformly low correlations. Jay and Copes (1957) found "broad category (overall) ratings" the least influenced by the seniority of those rated. Sub-category ambiguity errors and summated halo effects are minimized thereby as well.

The validity of ratings is generally expected to

increase with more raters per ratee to the extent that inter-rater agreement is high. However, Buckner (1959) found higher predictive validity for a complex criterion occurred when inter-rater agreement was low than when it was high. He attributed this to different raters being expert on, or perceiving, different facets of the total performance variance. This same principle is implicit where different raters rate different sections of a total sample. Distefano and Bass (1959) obtained a significant rank correlation between law students' admission test scores and numerical (1 to 5) ratings by court judges of their overall legal ability five years after graduation; each judge (in a different county) rating only an isolated sub-group of the total sample on which the correlation was based. Windle and Dingman (1960) feel such unique frames of reference allow greater validity where the criterion is complex than when it is uni-dimensional.

3. STUDIES RELATING TO INVENTORY FAKABILITY

This topic has been studied at least as early as 1932 (Steinmetz) following which it has been given continual attention, e.g. Kelly et al (1935), Borden (1943), Paterson (1946), Gough (1947), Longstaff (1948), Wesman (1952), Garry (1953), Heron (1956), Rusmore (1956), Bass (1957), Sorenson (1958),

Krug (1958), Borislow (1958), Mayo and Guttman (1959), Dickens (1960), Rimland (1962) Dunnette (1962), Kirchner (1962). The general conclusions have been that when instructed to simulate various roles testees can fake interest and personality inventories.

Certain studies are of relevance to the present investigation. The empirically developed C.P.I. was reported fakable by Dunnette et al (1958) and by Jackson and Messick (1958) who claimed a significant proportion of its total variance was accounted for by easily faked social desirability responses. However Dickens (1960) found it less fakable than the E.P.P.I., a forced-choice inventory equating binary items in terms of social desirability. The type of inventory which can adequately control for social desirability is evidently as yet unperfected (Borislow, 1958; Maher, 1959; Messick, 1960) although Norman (1961, 1962) appears to have made some progress in this regard.

Eysenck (1959) admits the N scale on his M.P.I. can be purposely distorted although felt the E scale was more resistant. Taylor's M.A.S. was shown by Mills and Hannum (1959) to be similarly transparent. Longstaff (1945), Paterson (1946), and Garry (1953) reported the Strong to be fakable, as did Gehman (1957) who found Engineers could simulate various roles,

particularly the social services group. The utility of such tests are therefore generally felt to be restricted to situations in which the testee has a desire to know or communicate his real, typical characteristics.

A further consideration however should be made regarding test fakability: although fakable, will they actually be faked in situations other than those providing instructions to fake? Green (1951), Heron (1956), Gordon (1956), Bass (1957), Sorenson and Sheldon (1958), Kirchner (1962), Rimland (1962) and Dunnette (1962) investigated this question and found generally that most scores did not increase significantly in the desirable direction under realistic "vested-interest" conditions. Sociability or extroversion scales were particularly unmodified while emotional adjustment measures showed some increase. Sorenson and Sheldon (1958) concluded faking to be more unlikely when the particular dimensions measured are poorly realized by the subjects. The type of person (sample) concerned is important. Kirchner (1962) found that applicants for sales positions faked more than those applying to be technical representatives, yet even sales applicants were found by Dunnette (1962) to fake much less (only one in seven) than employees instructed to fake good on the same test.

CHAPTER III

METHOD

1. THE SAMPLE

The total welfare worker staff employed with a large, province-wide public welfare agency was divided into two unequal groups. The major group, of 160 subjects, consisted of workers from larger regional offices having staffs of 4 or more workers, while a smaller group, of 40 subjects, represented workers from smaller offices. This latter group, for whom ratings would likely have been the least reliable, was restricted to that phase of the project concerned with the attempted simulation of the non-cognitive tests. Moreover, Rimland (1962) and Palermo (1961) found simulation and actual scores were reciprocally modified when both instructional sets were assumed by the same group, with the order significant. Separate groups were therefore used in the present study.

In order to maintain subject anonymity biographical data of the major sample was obtained on four variables in dichotomous form only: Sex (male or female); Age (over or under 30 years); Education (degree/diploma or not); and Length of Service (over or under 1 year). Percentages falling in the

respective categories are shown in Table I. The degree of relationship between these and the criterion was examined by appropriate significance tests.

TABLE I

BIOGRAPHICAL DATA FOR MALE, FEMALE AND TOTAL SAMPLES
EXPRESSED AS PERCENTAGES IN DICHOTOMOUS CATEGORIES

Sample	SEX		AGE		EDUCATION		LGTH. SERVICE	
	M	F	O	U	N	D	O	U
Male (N=69)	100	0	67.1	32.9	58.4	41.6	77.3	22.7
Female (N=76)	0	100	36.7	63.3	21.4	78.6	59.1	40.9
Total (N=145)	47.6	52.4	51.2	48.8	40.6	59.4	67.9	33.1

2. THE CRITERION

A memorandum outlining the general nature of the research was sent to office and unit supervisors in the larger offices requesting they rate each of their workers on a single criterion of "overall welfare worker suitability and proficiency". A 10 point numerical rating scale was used which ranged between the numbers 70 to 79 to take advantage of our cultural set regarding grading or being graded out of 100. This particular decile range would, it was hoped, allow

discrimination with little constraint due to "conscience", thus minimizing generosity errors, as compared with scales which possess a more explicit mid-point and consequent value-laden lower and upper halves. By informing raters that "there are satisfactory workers elsewhere who would be rated in the 50's and 60's but we are assuming we have none here," it was expected that ratings in the low 70's would not be avoided to the extent they would be were such ratings regarded as or identified with negative or failure values. (For full instructions to raters see Appendix 1). No attempt was made to define suitability or proficiency for the supervisors. Rating distributions for males and females ultimately tested are shown in Figs. 1 and 2 in Results.

To allow anonymity supervisors were instructed to choose, from a range of numbers arbitrarily assigned each office or unit, a code number for each worker beside which the appropriate rating was to be recorded. The particular tests to be subsequently administered were purposely not identified at this point in order to minimize criterion contamination due to subjective anticipation, by raters, of predictor-variables.

3. THE TESTS.

Cognitive:

(a) Reasoning Tests for Higher Levels of Intelligence (Valentine, 1954).

This test is said to provide an assessment of "general reasoning ability" at a level suitable for use in the selection of entrants to such as British universities and teacher's training colleges. Its two parts provide tests of induction and deduction respectively with a liberal total time limit (55 minutes). Although there are at present no North American norms the test's reviewer (Dale, 1959) recommends its experimental use therein for "cross-fertilization" purposes. Its author claims that as its purpose is "to provide.... a basis on which to select entrants" all that will be needed is "comparative estimates among applicants". However some relevance attaches to comparisons with norms provided on the teacher-training groups who possess both an educational level and an interest in people comparable with welfare workers. It was expected that this test would provide a discriminating measure of the type of reasoning ability required in helping to solve those interpersonal and social-living problems, often involving many variables, with which welfare work is concerned

(Wasserman and Gitlin, 1963). Three scores, induction, deduction, and total are obtained.

(b) Wonderlic Personnel Test (Wonderlic, 1945)

This short (12 minute) test consists of 50 items covering a wide variety of intelligence dimensions (numerical, verbal, spatial, etc.) having wide application in personnel research (Buros, 1953, 1959). Its inclusion in the present study was expected to allow efficient coverage of such additional domains as may be pertinent but not measured by (a) above. It provides a total score only. Considerable normative data is available.

Personality:

(a) The Maudsley Personality Inventory (Eysenck, 1959) is a short (48 item) yes? no inventory purporting to measure two basic personality dimensions, neuroticism (N) and extroversion (E). It was constructed empirically by a method of criterion factor analysis providing measures said to be relatively pure and independent. This test was included in the event these factors might contribute efficiently to the prediction of the criterion by accounting for non-overlapping portions of its variance. Norms are available for both English and American normal groups as well as certain psychiatric groups. A third score, E minus N, was also obtained

on the present sample in the event a correlation did occur between the two dimensions which may represent a meaningful measure masked by consideration of E or N alone. To avoid negative values a constant of 30 was added to these derived scores.

(b) California Psychological Inventory (Gough, 1957) consists of 480 True/False items providing measures on 18 scales considered by the author to be "characteristics important for social living and social interaction". It was constructed on empirical rather than rational bases utilizing criterion groups thought to characterize the dimensions measured. Interpretation is meant to stress degrees of normal functioning rather than the converse. The characteristics needed in the interpersonal activities of welfare workers, often under frustrating pressures (Schmidt, 1963), would seem to be suited to measurement by this instrument. Both male and female norms are available for a number of academic and occupational categories including graduate social work students and certain socially inadequate groups.

Interests:

The Strong Vocational Interest Blanks for men and women (Strong, 1959) each contain 400 items to which one responds in

terms of liking, disliking, or indifference. They were developed by the empirical technique to provide measures of the degree to which one's interests compare with those of various occupational groups. The 45 specific occupations listed on the men's form are divided into 11 more general occupational Groups while the 29 occupations on the women's form can be divided into 14 such Groups (see appendix). Each form has, in addition, a Masculinity-Femininity scale while the men's form has three other non-occupational scales: Interest Maturity, Specialization, and Occupational Level. Those scales in the Social Services category especially were expected to prove relevant while those in less verbal-interpersonal categories should be somewhat discriminating in the negative direction. Norms are available for all occupations measured plus the overall general population.

4. COLLECTION OF THE DATA

(a) Major Group.

Once all ratings were received the five tests were forwarded to supervisors with administration instructions for the workers (see Appendix 2.). As each subject handed in a completed paper, on which the name space was to be left blank, the supervisor wrote in the appropriate code number, privately.

The coding system, ensuring anonymity of subjects to both the researcher and higher administrative staff with respect to rating and test data, was thought vital to maximize motivation to respond with utmost honesty. Sorenson (1956) found a significant decrease in a mean adjustment score for non-signers compared to signers under actual attitude conditions, the latter achieving a mean score more comparable to that found under faking instructions. Biographical information, also identified with code only, was restricted to the dichotomous form to maintain anonymity. Eighty-nine percent of the tests were completed and returned resulting in a final sample size for this group of N=145. This was composed of 69 males and 76 females. Unreturned tests represent workers who either left the service, were too busy, or were ill during the period of data gathering.

(b) Simulation group.

A similar memorandum outlining the project but not involving the rating aspect was sent to smaller-office supervisors requesting that workers complete, again anonymously, the three non-cognitive tests, M.P.I., C.P.I., and Strong. These workers were instructed (see Appendix 3) to complete each of these tests as they felt a most proficient,

respected, qualified social worker would when applying for a much desired position in welfare, knowing the results would be taken into consideration by the employer when deciding whether or not to hire such an applicant. It was again thought that anonymity would promote adherence to the objective of this aspect of the study. Coding was not required for this group since results were not to be correlated with ratings or other data. Completed returns represented ninety percent of this group providing a sample size $N=36$. This was composed of 20 males and 16 females. The same factors accounted for unreturned tests as in (a).

5. STATISTICAL ANALYSIS

A separate analysis of the collected data according to sex was prompted both by the existence for some tests of male and female forms and by the findings of Carlson and Carlson (1960) who noted that of the many characteristics on which research groups can be divided none was more justified on the available evidence nor more often ignored than the sex dichotomy. Results based on male populations (which they found form a majority in personality research) are too frequently generalized to mixed populations or where a mixed group is used a separate analysis is only infrequently made. Borgatta

and Stimson (1963) have found it necessary to further emphasize this point, advising "extreme caution" in such generalizations. Similarly, with respect to interests, McCornack (1954) found that the revised Social Worker keys on the Strong were very discriminating between the sexes indicating their inappropriate use for the opposite sex. The original single key was similarly inappropriate for unmixed groups. The following procedures were therefore applied separately to both male and female samples.

Part A. Psychological Description of Welfare Workers.

The descriptive aspect of the research is restricted to a visual comparison of means and variations on the many test variables measured with appropriate available norms. Obviously specific significance tests could proceed almost indefinitely involving prohibitive calculations as well as being of dubious psychological value in this context. Statistics (means and standard deviations) in this part were obtained via computer as part of the multiple regression results. The extent to which the means of the biographical variables fell above or below the dichotomy mid-points was also determined, as a measure of central tendency, by calculating χ^2 since these variables presumably also serve to characterize

(this sample of) welfare workers.

Part B. Psychological Discrimination of High-rated from Low-rated Welfare Workers.

The identification of the test variables providing significant discrimination of the high-rated from low-rated workers was effected by calculating t ratios.

The significance of the difference between the ratios of the 4 dichotomous biographical variables in the High and Low groups were determined by calculating the appropriate χ^2 .

Part C. Multiple Regression Analysis.

(1) In the event one or more of the biographical variables might prove sufficiently predictive of the criterion, point biserial correlations between these and the latter were calculated and their significance tested with an appropriate t test. Variables displaying a significant relationship were then considered for further analysis via (2) below.

(2) A restriction on the number of variables which the multiple regression program was able to handle necessitated the computation first of intercorrelation matrices including all test variables, any biographical variables displaying a significant relationship to the criterion, and the criterion. Both male and female matrices were examined in an

attempt to identify the 30 variables in each which apparently most satisfied the requirement of minimal intercorrelation amongst themselves but maximal correlations with the criterion. Those selected were analysed further via (3) below.

(3) A stepwise multiple linear regression program (Smillie, 1962) was revised by its author to increase the number of variables handled from 16 to 30. This analysis provides, among other results, the optimal regression coefficients for the most predictive independent variables in the order of their relative contribution. Thus that variable which accounts for the greatest portion of the criterion variance is obtained first with the coefficient which, were no further variables utilized, would provide the maximum multiple correlation. As the succeeding variables are added the earlier coefficients alter value slightly, to maximize the correlation at that point. Various considerations may determine when no further variables need be included in the regression equation. When the standard error of the criterion (provided in the results) reaches a minimum the increase in predictive efficiency is considered insignificant (Smillie, 1963), so this criterion was applied in the present study.

The multiple correlation coefficient R thus derived

was tested for significance from zero by calculating the appropriate F value.

(4) Tests to determine possible non-linearity of relationships between the regression variables and the criterion were required to justify the assumption that a linear equation was an adequate fit. The square of the correlation ratio Eta (η) was calculated from bifrequency tables and its significance from r^2 tested by calculating the appropriate F value. Linearity exists to the extent that the least squares via r and η are not significantly different.

The formulae for all statistics used are shown in Appendix 5.

Part D. Analysis of Simulation Scores.

Tests of significance of the difference between Simulation group means and High group means were made on those variables selected for the regression equations. These tests utilized the same formulae as in Part B, for the same reasons. Where such Simulation means were found to be not significantly different from or to fall 'beyond' the High group means, re-interpretation of the possible utility of the regression equation would seem warranted.

Comparisons between Simulation means and High means

were similarly made with respect to those variables which discriminated the High from Low groups but did not predict the criterion as efficiently as the regression variables. An estimate of their fakability was considered of comparable interest however and was therefore tested in terms of the same hypothesis.

CHAPTER IV

RESULTS

PART A. PSYCHOLOGICAL DESCRIPTION OF WELFARE WORKERS

The raw score means and standard deviations for the major group on all test variables are shown in Tables II and

TABLE II

RAW SCORE MEANS AND STANDARD DEVIATIONS FOR ALL
TEST VARIABLES: MAJOR GROUP - MALES. N = 69

Variable	\bar{X}	S	Variable	\bar{X}	S	Variable	\bar{X}	S
Valentine			California			Strong		
I	10.0	4.4	Py	12.2	2.1	YPh	34.8	10.4
D	14.5	8.9	Fx	10.0	3.2	PD	38.7	10.2
R	24.5	11.6	Fe	17.7	3.9	PA	43.8	9.3
Wonderlic			Strong			YS	33.5	9.5
W	29.0	6.9	Art	24.6	8.9	SST	40.4	9.3
Maudsley			Psy	30.5	10.3	SS	34.8	8.7
N	16.6	8.4	Ach	24.8	11.5	SW	41.1	9.9
E	25.7	7.6	Phy	31.1	10.2	Min	32.7	11.3
E-N	39.1	12.9	Ost	34.7	9.9	Mus	36.1	10.3
California			Den	25.4	8.6	CPA	28.3	9.2
Do	28.9	4.8	Vet	24.9	9.6	SCP	34.9	9.0
Cs	21.5	2.7	Mth	16.7	8.7	Acc	28.8	10.7
Sy	25.1	4.3	Pht	11.7	9.1	Off	34.4	8.3
Sp	36.1	5.2	Engr	20.2	10.1	PrA	26.3	10.2
Sa	21.5	3.5	Chm	23.4	9.4	Ban	29.9	8.9
Wb	38.9	2.9	PM	30.5	7.1	Pha	30.3	8.5
Re	32.1	3.3	Fmr	31.7	8.8	SM	28.9	8.3
So	36.8	4.2	Avr	29.6	10.6	REs	33.2	7.0
Sc	32.8	6.0	Cpt	21.0	10.9	LIns	32.0	8.3
To	25.4	4.0	Pri	35.5	8.3	Adv	33.3	7.1
Gi	20.4	5.6	MthT	33.7	8.6	Law	34.3	8.0
Cm	26.4	1.7	IAT	20.3	11.5	A-J	31.6	6.5
Ac	29.5	3.0	AgT	27.4	10.0	Pres	27.8	7.1
Ai	21.9	3.2	Pol	33.6	7.9	OL	52.4	5.6
Ie	40.4	3.7	For	29.4	9.0	MF	41.5	8.0

III for males and females respectively. For explanation of abbreviations see Appendix. The mean total scores (R) on Valentine's Reasoning Test approximate those achieved by British trainee teachers (non-university) reported by Valentine (1954) of 27.6 and 23.0 respectively. General population norms are not provided. British university students achieved an overall mean of 37.4 on this test, varying from 30.2 for

TABLE III

RAW SCORE MEANS AND STANDARD DEVIATIONS FOR ALL TEST VARIABLES: MAJOR GROUP - FEMALES. N = 76

Variable	\bar{X}	S	Variable	\bar{X}	S	Variable	\bar{X}	S
Valentine			California			Strong		
I	10.3	4.9	Sc	32.2	6.9	Lins	18.8	8.8
D	12.9	11.0	To	25.3	3.4	Buy	20.4	10.3
R	23.2	14.4	Gi	19.4	5.6	HsW	32.0	8.5
Wonderlic			Cm	26.4	1.8	ElmT	30.4	8.1
W	28.7	6.9	Ac	28.5	3.9	Off	32.9	6.7
Maudsley			Ai	23.5	3.5	Stgr	35.9	5.6
N	16.1	8.8	Ie	41.2	3.5	BEdT	23.7	8.4
E	26.2	7.7	Py	12.5	2.5	HEcT	22.5	10.0
E-N	39.6	11.3	Fx	12.1	4.5	Dtn	23.6	9.3
California			Fe	23.8	2.9	PEdT	28.7	12.1
Do	27.7	6.0	Strong			OT	35.3	6.9
Cs	21.9	3.8	Art	27.8	7.3	Nur	31.1	10.3
Sy	25.5	4.2	Auth	28.3	8.4	MthT	27.0	11.7
Sp	37.8	5.6	Lib	24.8	7.6	Den	24.6	8.6
Sa	22.0	3.6	ET	29.8	12.2	LT	26.5	10.5
Wb	38.3	3.6	SW	40.3	8.3	Phy	27.5	9.0
Re	31.8	3.4	Psy	30.5	11.8	MT	23.5	11.3
So	38.1	4.5	Law	29.3	10.1	Mus	32.8	7.6
			SST	28.2	9.3	PhT	35.2	10.1
			YS	19.9	9.5	Engr	22.4	10.1
						MF	54.5	8.5

medical students to 53.4 for Oxbridge scholarship winners. The relatively wide standard deviations obtained are similar to those reported for the above British groups, reflecting the tests discriminating power. Scores by welfare workers ranged from 2 (obtained by 3 Ss) to 68 out of a possible 71. Norms are not available for the two sub-scores which however could have relevance to Parts B or C of this study.

The mean scores on the Wonderlic were not significantly different for the two groups. They approximate that generally achieved by American 4th year undergraduate college populations (i.e. males - 30.8; females - 29.1) thus exceeding such as skilled tradesmen and clerical workers by about 8 to 10 points.

The mean male welfare worker N score on the Maudsley places this group below both English and American general mixed-sex population means (19.9 and 20.9). The female welfare worker N score, although slightly lower than the males, needs to be considered in light of the fact that women generally score about 3 points higher than men (Eysenck, 1959). It appears that while male welfare workers are slightly less neurotic than men in general, female workers are, in relation to their normative group, considerably less so (at least in

Eysenck's sense of the term). Both samples' mean E scores fell between those of English normals (24.9) and American students (28.5), these values representing mixed-sex populations.

The mean C.P.I. scores for male workers fall, for every scale, above men in general indicating, in Gough's interpretation, better than average adequacy in social and interpersonal functioning. No single scale nor group of scales stand out although further interpretation is presented in Chapter IV. The female workers achieve scores generally above the men, being particularly elevated on the Ai and Fx scales. Thus besides being slightly more adequate in social behaviour (in its broadest sense) they are particularly more "independent, resourceful, and flexible" than women in general. However they do fall below the male workers on Re, So, Gi, and Ac, suggesting they are less influenced by too restrictive or conforming ethical and social forces. Further discussion is given in Chapter IV.

The major finding on the Strong for male workers is their above average scores on Group V scales (social services) and the one very low mean on the Physicist scale. The female group exceed women in general most noticeably on the Social

Worker, Psychologist, and Occupational Therapist scales while following below mainly on the Life Insurance Saleswoman, Buyer, and Librarian scales.

Comparisons of the present findings with those of other "helping-professions" (see Chapters II and IV) indicate, to the extent that it is possible to be comprehensive, that the hypothesis of Part A may be accepted. Specifically, the Valentine scores are comparable to those of teachers, the Wonderlic to college populations (no "helping-profession" norms are provided), the M.P.I. N and E scores fall beyond the general population in a direction away from psychiatric groups (Figure 13), the C.P.I. scores are above normal in terms of social adequacy and quite comparable to social workers (Figure 14 and 15), while Group V (social service) Strong scores and those similar in the female form differentiate this group from the general public, salesmen and physical scientists, being similar to those of social workers (Figure 16/17).

Welfare workers placed typically in certain categories of those biographical dichotomies measured, as shown in Table IV. For the total sample the number of male workers is not significantly different from the number of females. With

TABLE IV

PERCENTAGE OF Ss IN ONE CATEGORY OF BIOGRAPHICAL VARIABLE DICHOTOMIES, WITH χ^2 AND CHANCE PROBABILITIES ASSOCIATED WITH THEIR DIFFERENCES FROM EXPECTED PERCENTAGES

Variable	Category	Sample	Obs. %	Exp. %	χ^2	P
Sex	Male	Total	47.6	50.0	.23	-
Age	Over	M	67.0	50.0	11.62	**
		F	36.7	50.0	7.20	**
Educ	Non-D	M	58.0	50.0	2.60	-
		F	21.4	50.0	30.90	**
Lgth Serv	Over	M	77.0	50.0	28.83	**
		F	59.1	50.0	3.40	-

(Obs. = Observed; Exp. = Expected; - = N.S.; ** = less than .01)

respect to age, male workers average over 30 years while females do not. The number of male workers with and without degrees or diplomas is not significantly different, while significantly more of the female workers do possess such qualifications than do not. Finally, it is noted that the majority of males have more than one year of service while female workers are fairly evenly divided on this dichotomy.

Part B. Psychological Discrimination of High-rated from Low-rated Welfare Workers.

1. Ratings

The original rating distributions are shown in Figures

1 and 2. The semblance of normality apparent likely resulted to some extent from errors of central tendency, common in

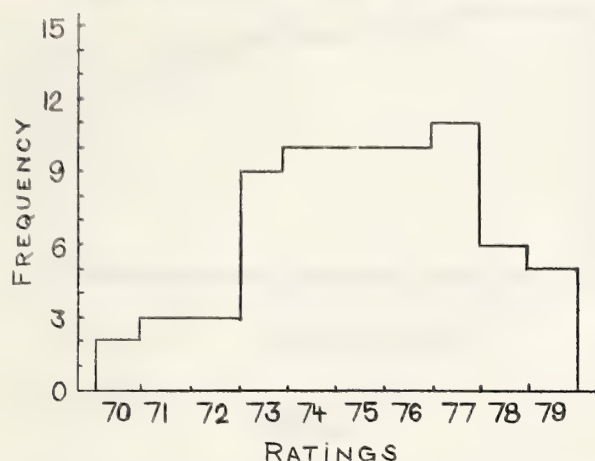


Fig. 1

Distribution of Ratings
Males. N = 69

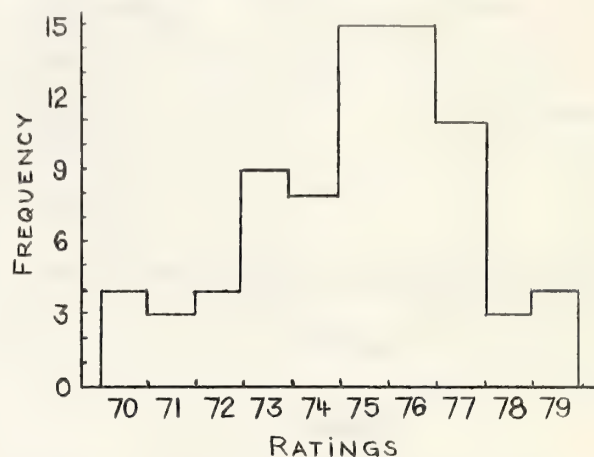


Fig. 2.

Distribution of Ratings
Females. N = 76

ratings, although the qualities underlying this criterion could possibly distribute somewhat normally. To the extent it was primarily the former, validity may be increased by a transformation of the ten point scale to the range 1 to 7 by combining the tails thus equalizing the quantity of low, medium, and high ratings. It is possible this was assisted also by the particular rating instructions given. Transformed rating distributions are shown in Figures 3 and 4. It was not felt there would be an appreciable loss of information by such a transformation since reliability is undoubtedly not at a level requiring finer sensitivity.

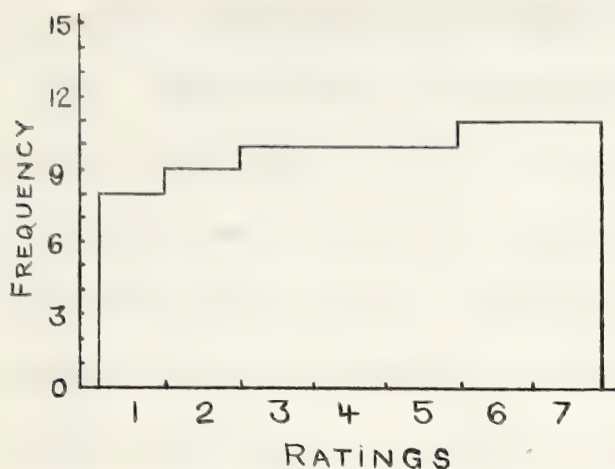


Fig. 3

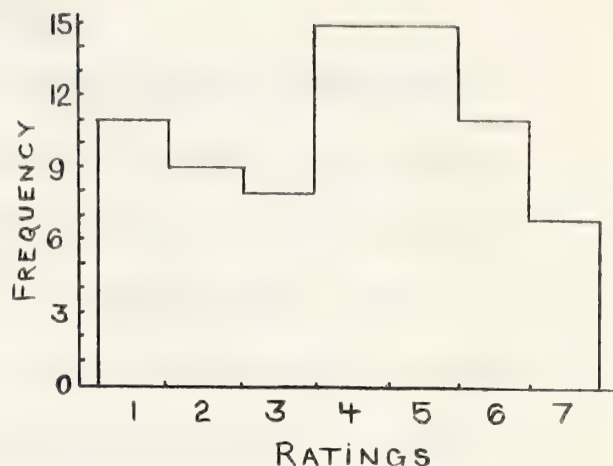


Fig. 4

Distribution of Ratings - Males. Distribution of Ratings - Females.
 N = 69 (Tails Combined) N = 76 (Tails Combined)

With respect to statistical analyses normality of the variates concerned is not required in the computation or significance testing of Pearson's r or its multiple R derivative (Nefzger and Drasgow, 1957), while the central-limiting theorem provides the basis for the ultimate normality of the High and Low sub-groups to which t -tests were applied. Such groups of course represent the same upper and lower percentage of total subjects whether or not tails are combined. The High group consisted of those in rating categories 6 and 7 while the Low group consisted of those in categories 1 and 2.

2. TEST VARIABLES AS DISCRIMINATORS

Tables V and VII show High and Low group means and t-test results for all test variables. Of the 70 male sample variables on which scores were obtained 39 or 55.7% proved discriminating at the .05 level of significance. This supports the hypothesis of Part B for this sample. The particular tests chosen appear to provide, for the male sample, an efficient coverage of the dimensions underlying the criterion, with the discriminating variables being represented relatively equally on all tests. The more discriminating are however found primarily in the cognitive and interest tests, with the total and deduction Valentine scores, the SW, OL, and PA scales proving the most discriminative. The rank order of the significantly discriminating male variables (test and biographical) are shown in Table VI. Comparisons on the C.P.I. and Strong tests are facilitated by reference to Figures 5 and 6 which represent High and Low means graphically.

Since the Wonderlic, Lawyer, and Ie scales are also relatively discriminating it can be seen that general mental ability and professional status potential, especially in interpersonal, communicative fields, most distinguishes the higher-rated workers from those of lower rating.

TABLE V

TEST VARIABLE MEANS FOR HIGH AND LOW RATED MALE GROUPS,
T RATIOS, AND CHANCE PROBABILITIES ASSOCIATED WITH
THEIR DIFFERENCES. $N_H = 22$; $N_L = 17$

Variable	\bar{X}_H	\bar{X}_L	t	p	Variable	\bar{X}_H	\bar{X}_L	t	p
Valentine					Strong				
I	12.7	8.1	3.24	**	Engr	19.5	21.2	.31	-
D	22.2	6.4	7.27	**	Chem	24.1	22.2	.52	-
R	34.9	14.4	7.49	**	PM	30.0	30.9	.24	-
Wonderlic					Fmr	29.6	36.2	2.74	**
W	33.9	24.6	4.57	**	Avr	28.3	33.1	1.45	-
Maudsley					Cpt	16.5	32.4	3.96	**
N	13.9	19.4	2.03	*	Pri	33.7	41.5	3.14	**
E	26.4	21.6	2.17	*	MthT	34.0	37.0	1.11	-
E-N	42.5	32.2	2.94	**	IAT	16.4	27.2	3.08	**
California					AgT	25.3	32.4	3.02	**
Do	31.0	26.9	2.73	**	Pol	31.9	38.8	2.89	**
Cs	22.4	19.8	3.25	**	For	27.9	35.6	3.47	**
Sy	27.2	23.8	2.43	*	YPh	35.4	33.0	.69	-
Sp	38.4	33.6	2.98	**	PD	43.0	35.0	2.42	*
Sa	22.6	20.1	2.08	*	PA	50.7	35.7	5.38	**
Wb	39.8	37.8	2.05	*	YS	34.7	31.1	1.08	-
Re	33.5	30.4	3.11	**	SST	44.5	34.8	2.37	*
So	38.5	36.0	1.88	-	SS	38.8	30.4	3.19	**
Sc	34.4	31.2	1.46	-	SW	48.6	33.6	7.14	**
To	27.6	22.6	3.89	**	Min	35.5	28.5	1.84	-
Gi	22.0	19.1	.48	-	Mus	34.8	35.7	.19	-
Ac	31.3	28.0	4.10	**	CPA	30.9	24.6	2.26	*
Ai	23.0	20.4	2.82	**	SCP	36.3	35.9	.08	-
Ie	42.8	39.2	3.69	**	Acc	28.1	29.5	.29	-
Py	13.2	11.2	3.78	**	Off	33.8	36.8	1.10	-
Fx	10.8	9.1	1.84	-	PrAg	26.0	28.0	.51	-
Fe	17.7	18.3	.56	-	Ban	30.5	31.6	.44	-
Strong					Pha	29.8	28.8	.43	-
Art	23.0	25.6	.89	-	SM	29.9	26.2	1.41	-
Psy	34.8	24.1	3.48	**	REs	34.1	33.1	.49	-
Ach	23.6	24.9	.11	-	LIns	32.5	30.1	.91	-
Phy	33.6	27.6	2.02	*	Adv	35.2	29.3	2.56	*
Ost	35.6	32.4	.97	-	Law	38.6	27.7	4.51	**
Den	22.6	27.4	1.61	-	A-J	33.5	28.1	2.58	*
Vet	22.4	26.3	1.64	-	Pres	28.9	26.9	1.86	-
Mth	18.4	14.4	1.26	-	OL	55.9	47.8	6.09	**
Pht	11.1	11.8	.18	-	MF	41.4	42.9	.47	-

(- = N.S.; * = less than .05; ** = less than .01)

TABLE VI

SIGNIFICANTLY DISCRIMINATING VARIABLES IN
RANK ORDER, MALE SAMPLE

Rank	Variable	Rank	Variable	Rank	Variable
1	R	14	Psy	27	Fmr
2	D	15	For	28	Do
3	SW	16	Cs	29	A-J
4	OL	17	I	30	Adv
5	PA	18	SS	31	Sy
6	Educ	19	Pri	32	PD
7	W	20	Re	33	SST
8	Law	21	IAT	34	CPA
9	Ac	22	AgT	35	E
10	Cpt	23	Sp	36	Sa
11	To	24	E-N	37	Wb
12	Py	25	Pol	38	N
13	Ie	26	Ai	39	Phy

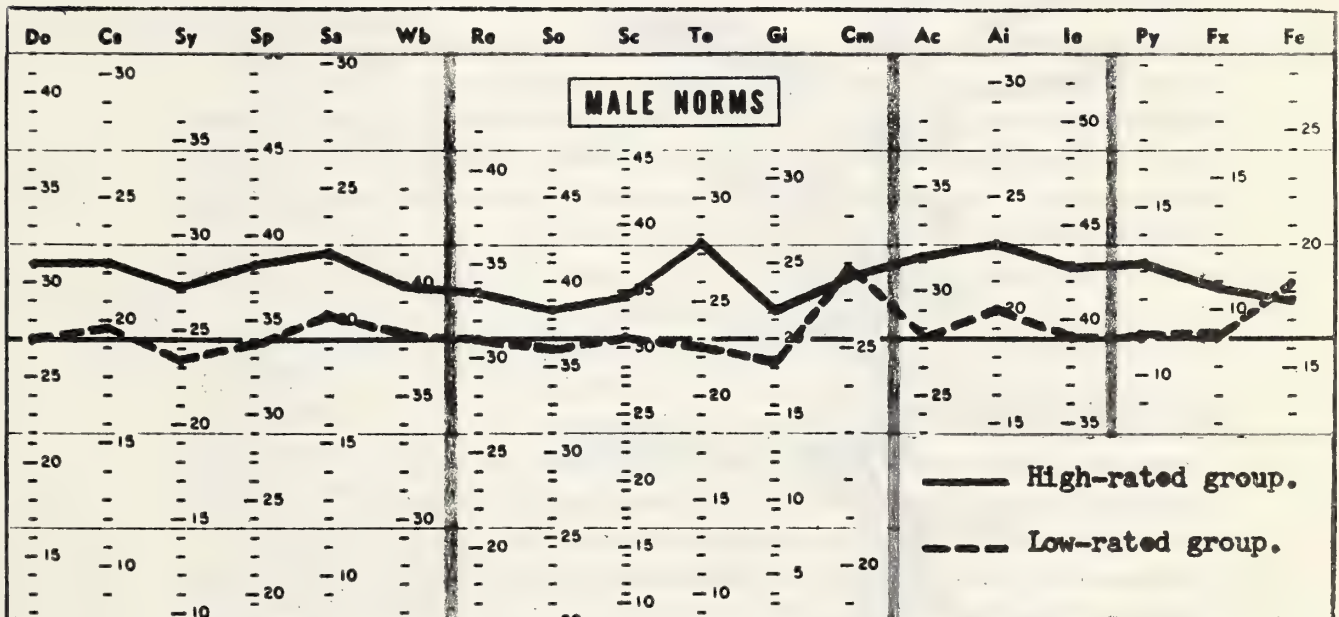


Figure 5

California Psychological Inventory High and
Low Group Mean Profiles. Male Sample

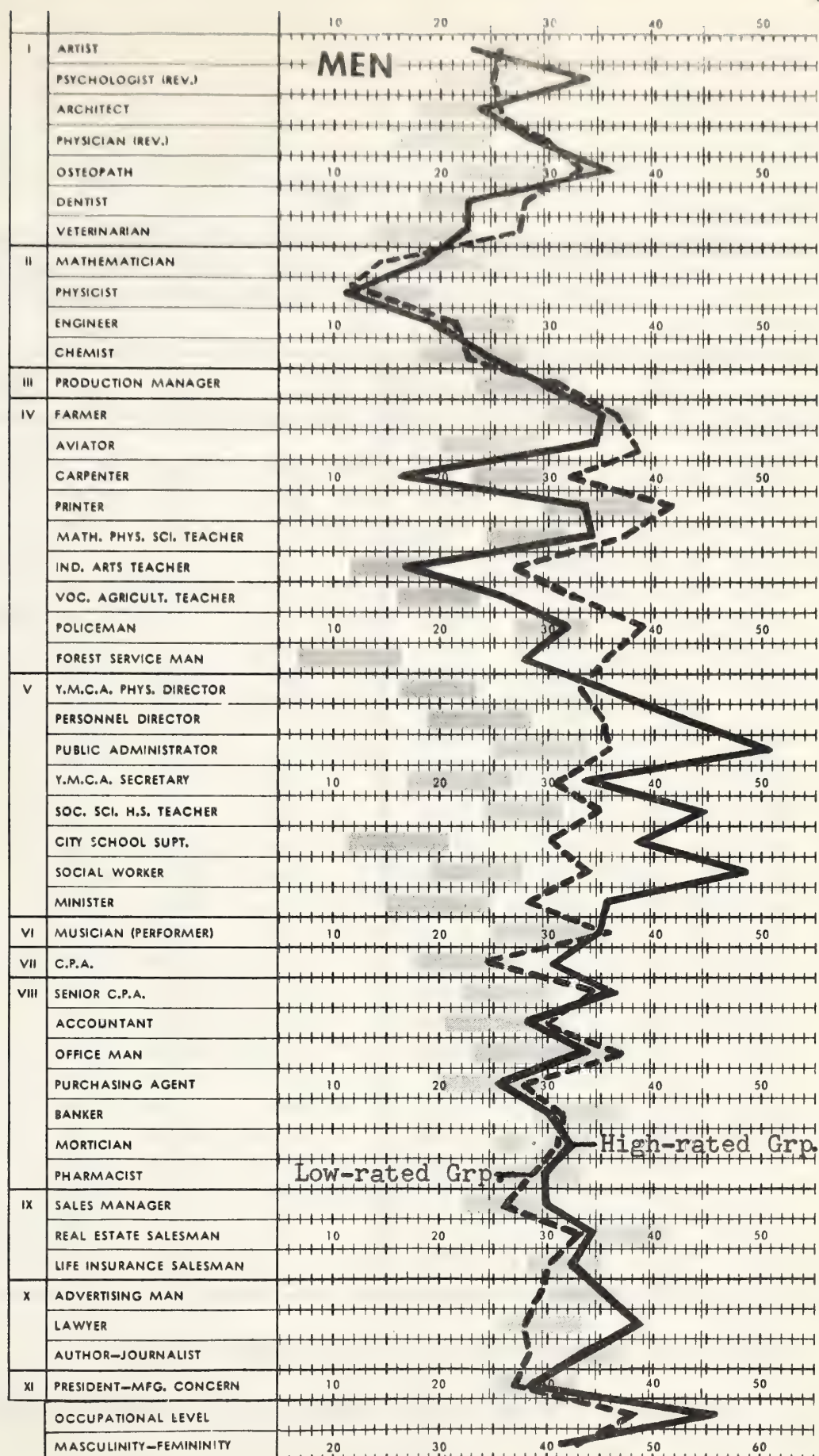


Figure 6

Strong Vocational Interests High and Low Group Mean Profiles
Male Sample.

TABLE VII

TEST VARIABLE MEANS FOR HIGH AND LOW RATED FEMALE GROUPS,
T RATIOS, AND CHANCE PROBABILITIES ASSOCIATED WITH
THEIR DIFFERENCES. $N_H = 18$; $N_L = 20$

Variable	\bar{X}_H	\bar{X}_L	t	p	Variable	\bar{X}_H	\bar{X}_L	t	p
Valentine					Strong				
I	14.4	6.4	5.92	**	Auth	28.9	24.8	1.52	-
D	23.8	3.8	9.16	**	Lib	23.7	21.7	.79	-
R	38.2	10.1	9.93	**	ET	39.1	23.9	4.52	**
Wonderlic					SW	48.5	33.8	7.11	**
W	34.4	23.2	6.21	**	Psy	39.8	21.5	6.98	**
Maudsley					Law	35.6	25.4	3.51	**
N	13.7	18.0	1.43	-	SST	35.9	25.2	4.11	**
E	26.4	25.5	.39	-	YS	29.8	18.5	4.27	**
N-E	42.8	37.6	1.53	-	LIns	19.1	21.1	.64	-
California					Buy	13.7	27.9	5.10	**
Do	28.6	26.6	1.33	-	Hsw	29.0	37.2	3.81	**
Cs	23.7	22.0	1.80	-	ElmT	31.1	33.7	1.03	-
Sy	26.9	24.9	1.51	-	Off	29.9	36.3	3.38	**
Sp	40.5	36.1	2.62	*	Stgr	33.7	38.2	2.91	**
Sa	22.8	21.0	1.64	-	BEdT	22.4	26.8	1.62	-
Wb	38.3	38.8	.41	-	HEcT	20.6	29.2	3.44	**
Re	31.4	31.6	.18	-	Dtn	20.2	29.8	3.79	**
So	36.9	39.7	1.81	-	PEdT	38.2	22.1	5.54	**
Sc	32.0	33.8	.72	-	OT	34.7	34.7	0	-
To	27.0	25.2	1.83	-	Nur	30.2	34.0	1.08	-
Gi	18.8	22.2	2.06	*	MthT	30.7	27.3	.80	-
Ac	28.9	27.8	.92	-	Den	23.4	24.2	.06	-
Ai	25.7	22.0	3.86	**	LT	22.9	27.2	1.33	-
Ie	42.1	39.9	2.23	*	Phy	30.1	22.6	2.49	*
Py	13.3	12.0	1.47	-	MT	26.7	23.3	.98	-
Fx	15.1	10.5	3.83	**	Mus	33.8	31.2	1.05	-
Fe	23.6	23.5	.06	-	Pt	39.4	31.9	2.51	*
Strong					Engr	29.9	17.3	6.43	**
Art	25.8	24.1	.28	-	Fe	56.3	58.1	.92	-

Of the 55 female sample variables on which scores
were obtained 26 or 47.3% proved discriminating at the .05

level of significance. The hypothesis of Part B for the female sample is therefore rejected. Discriminating variables were again distributed throughout the tests given although, compared to the male sample, were quite sparse on the C.P.I. which likely accounts for the less than 50% figure attained. The rank order of these variables is shown in Table 8.

TABLE VIII
SIGNIFICANTLY DISCRIMINATING VARIABLES IN
RANK ORDER. FEMALE SAMPLE

Rank	Variable	Rank	Variable	Rank	Variable
1	R	10	ET	19	Off
2	D	11	YS	20	Stgr
3	SW	12	SST	21	Sp
4	Psy	13	Ai	22	PhT
5	Engr	14	Fx	23	Phy
6	W	15	Hsw	24	Educ
7	I	16	Dtn	25	Ie
8	PEdT	17	Law	26	Gi
9	Buy	18	HEct		

The more significant were again in the cognitive tests and interest inventory with the former more discriminating than in the male sample. Figures 7 and 8 allow comparisons of High and Low means on the C.P.I. and Strong tests.

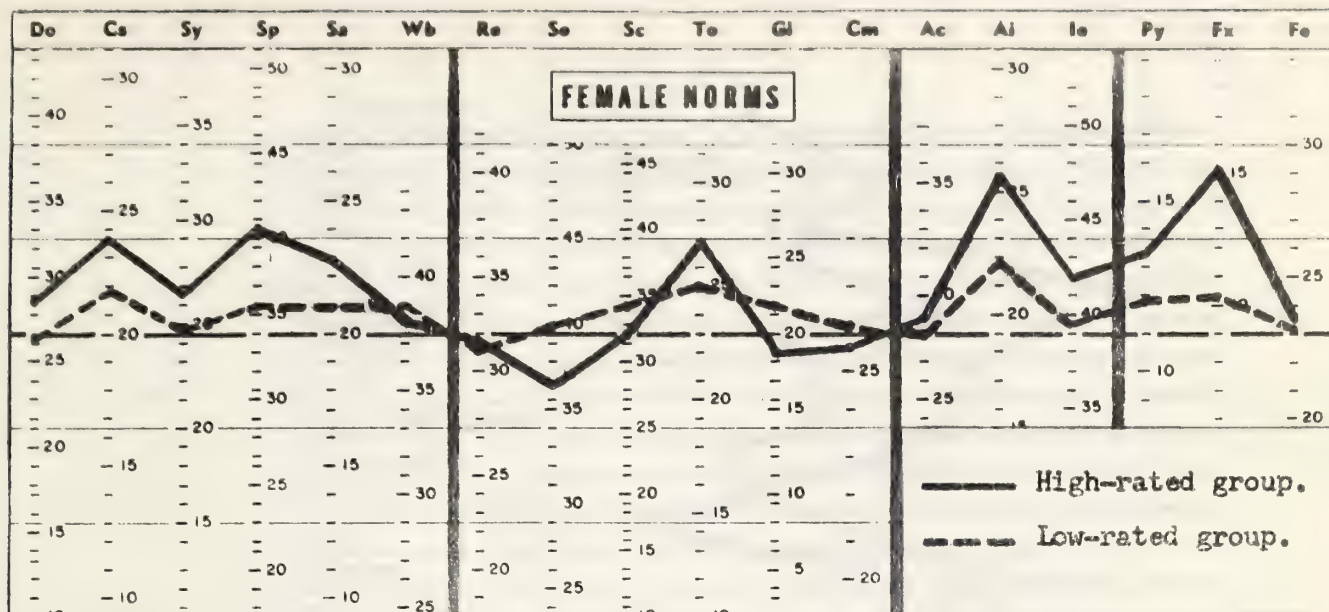


Figure 7

California Psychological Inventory High and Low Group Mean Profiles. Female Sample

3. BIOGRAPHICAL VARIABLES AS DISCRIMINATORS

The extent to which the biographical variables discriminate between the High and Low-rated groups is shown by χ^2 values calculated for their dichotomy ratio differences in Table IX. The discriminative value of 'Education' exceeds noticeably the other biographical variables, especially in the less homogeneous male sample where it places higher in rank order. This variable presumably reflects qualities similar to those of the more discriminative test variables (e.g. general ability; professional status potential).

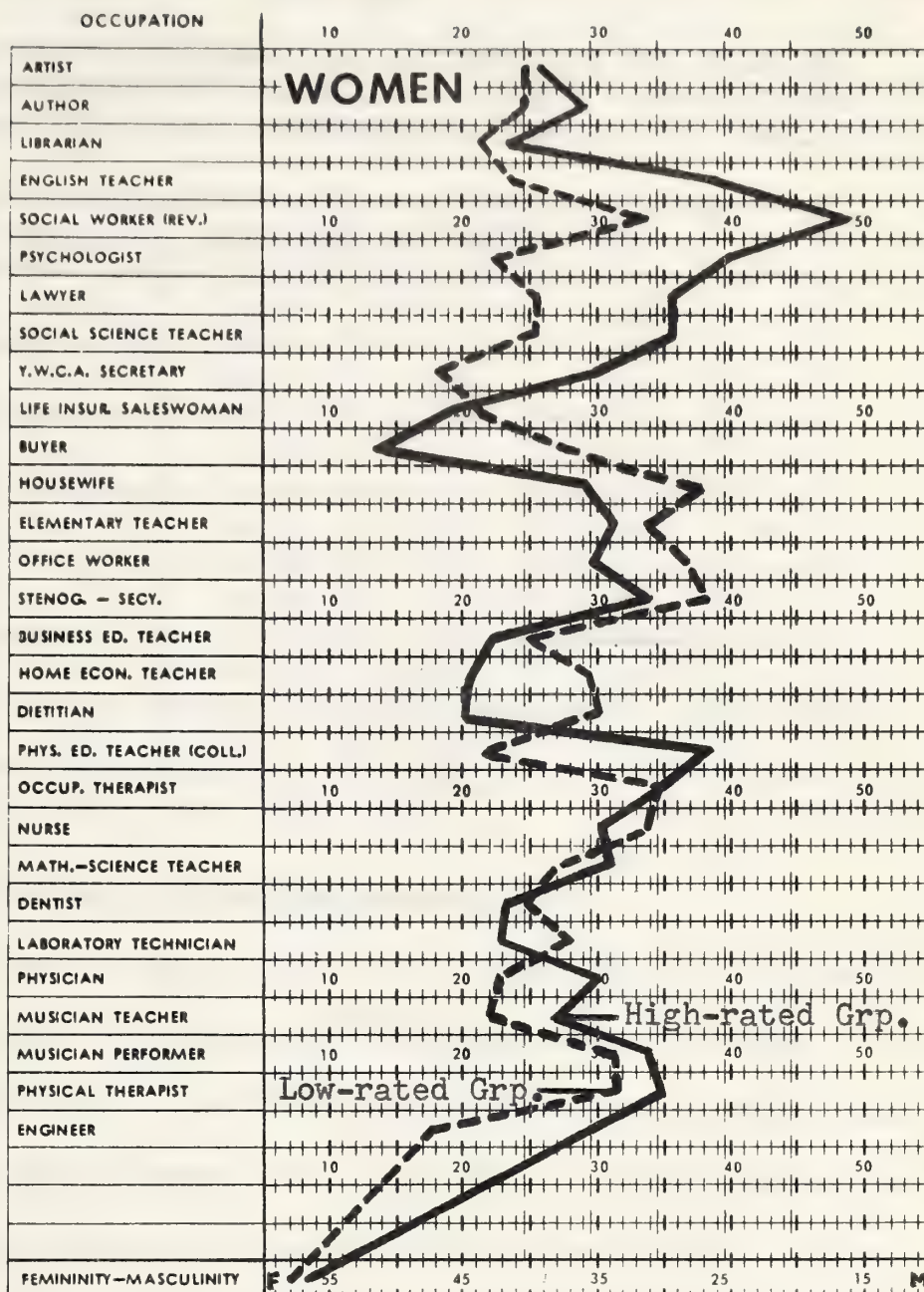


Figure 8

Strong Vocational Interests High and Low Group Mean Profiles
Female Sample.

TABLE IX

RATIOS OF Ss IN BIOGRAPHICAL DICHOTOMIES FOR HIGH AND LOW-RATED GROUPS, χ^2 VALUES, AND CHANCE PROBABILITIES ASSOCIATED WITH THEIR DIFFERENCES. MALES AND FEMALES

Variable	Sample	Ratio (H)	Ratio (L)	χ^2	p
Sex	Total	17/20	22/18	.58	-
Age (O/U)	M	16/6	13/4	.24	-
	F	6/12	12/8	3.29	-
Educ (N/D)	M	6/16	15/2	12.83	**
	F	2/16	8/12	10.74	**
Lth Serv (O/U)	M	18/4	13/4	.14	-
	F	9/9	13/7	1.31	-

(- = N.S.; ** = less than .01)

Part C. Multiple Regression Analysis

The degree of association between the biographical variables and the rating criterion is shown in Table X expressed in terms of point biserial correlations which were tested for significance from zero with t. Only 'Education' proved significant. It was therefore considered to be of potential value as a predictor so included in the intercorrelation analysis. The 30 variables selected for regression analysis by inspection of intercorrelations and criterion correlations are listed in arbitrary order in Table XI.

Relationships with the criterion are positive except where (-) is shown.

TABLE X
POINT BISERIAL CORRELATIONS BETWEEN BIOGRAPHICAL
VARIABLES AND CRITERION WITH THEIR
SIGNIFICANCE TEST RESULTS

Variable	Sample	r_{pbi}	t	p
Sex	Total	.064	.55	-
Age	M	.132	1.11	-
	F	.203	1.81	-
Educ	M	.454	3.54	**
	F	.334	2.51	*
Lth Serv	M	.059	.47	-
	F	.089	.74	-

(- = N.S.; * = less than .05; ** = less than .01)

TABLE XI
VARIABLES ENTERING REGRESSION ANALYSIS

Male Sample			Female Sample		
W	Ac	PD	W	AI	Buy(-)
R	Ai	PA	R	Ie	HW(-)
E-N	Ie	SW	E-N	Py	Stgr(-)
Do	Py	CPA	Do	Fx	Dtn(-)
Cs	OL	Pres	Sy	ET	PEdT
Sp	Psy	SM	Sp	SW	Phy
Sa	Vet	Adv	Sa	Psy	Mus
Wb	Mth	Law	So	Law	PT
Re	Cpt(-)	A-J	Gi	SST	Engr
To	Pol(-)	Educ	Ac	YS	Educ

It can be seen that the lists are slightly different for males and females (in addition to the Strong differences). On the C.P.I. the Cs, Wb, Re, and To scales appear to be of predictive value for the male sample but not for the females while Sy, So, and Gi were of greater predictive potential for the latter. For neither sample were N or E listed although the E minus N derived score is of apparent value in both.

The predictor variables determined by the regression analysis to account most efficiently for the criterion variance are shown with regression coefficients (beta weights), constants, and proportion of variance accounted for by each predictor in rank order in Tables XII and XIII. It is seen

TABLE XII

RESULTS OF REGRESSION ANALYSIS FOR MALE SAMPLE

Rank	Predictor	Regr. Coeff.	R ²
1	R	.0542	.494
2	PA	.0388	.182
3	OL	.1098	.081
4	SW	.0520	.023
5	PD	-.0239	.014
6	To	.1150	.009
7	Ie	-.0877	.015
8	W	.0468	.006
9	A-J	-.0744	.009
10	Educ	.4653	.007
11	Law	.0378	.008
Constant = -5.6913		Total = .848	
R = .921 F = 28.7 (Significant beyond .001 level)			

that 'Education' was ultimately selected for both male and female regression equations as an efficient predictor.

TABLE XIII

RESULTS OF REGRESSION ANALYSIS FOR FEMALE SAMPLE

Rank	Predictor	Regr. Coeff.	R ²
1	R	.0494	.502
2	SW	.0841	.103
3	W	.0992	.042
4	Sa	-.1108	.020
5	Phys	.0900	.015
6	Stgr	.1102	.016
7	YS	.0642	.016
8	E-N	.0262	.010
9	Ie	-.0582	.013
10	Educ	.7559	.010
11	PEdT	-.0069	.006
12	HW	-.0580	.004
13	Psy	.0569	.016
Constant = -4.1542		Total = .772	
R = .879 F = 17.1 (Significant beyond .001 level)			

Its relatively low position in each (10th place) however suggests that the other biographical variables would very likely not have been included had they entered the analysis.

The multiple correlation coefficients are remarkably high, allowing acceptance of the hypothesis of this Part for both samples. A large portion of the predictable criterion variance was accounted for in both samples by the total score (R) of the Reasoning test, with interest variables PA for the

males and SW for the females contributing the next major portions. The multiple regression equation for the male sample takes the form:

$$Y'_M = .0542R + .0388PA + \dots + .0378Law - 5.6913$$

while that for the female is:

$$Y'_F = .0494R + .0841SW + \dots - .0569Psy - 4.1542$$

The standard error of the criterion actually reached its minimum for both regressions after about fifteen or sixteen variables had been entered but contributions beyond the particular "cut-off" points chosen were minute. Direct comparisons of the beta weights are difficult since raw not standard scores are utilized.

Those variables included in the equations were tested for the linearity of their relationships with the criterion as shown in Tables XIV and XV. Of the 24 relationships tested only 2 (those with female variables Phys and Stng) appear to be non-linear and at a low level of significance ($p = \text{approx. } .05$). Were the exact configural formulae for these known the prediction would be improved only slightly.

Part D. Fakability of the Non-cognitive Tests

The raw score means and standard deviations for the Simulation groups on the non-cognitive tests are shown in

TABLE XIV

ETA TEST OF LINEARITY OF THE RELATIONSHIPS BETWEEN
THE REGRESSION EQUATION VARIABLES WITH THE
CRITERION. MALES: N = 67

Variable	r	η	F	p
R	.494	.532	1.72	-
PA	.457	.473	0.49	-
OL	.349	.430	2.11	-
SW	.356	.381	0.64	-
PD	.150	.141	2.59	-
To	.161	.269	2.71	-
Ie	.116	.145	0.73	-
W	.370	.440	2.68	-
A-J	.055	.119	1.68	-
Educ	.206	.251	0.92	-
Law	.238	.307	2.41	-

(- = N.S.)

TABLE XV

ETA TEST OF LINEARITY OF THE RELATIONSHIPS BETWEEN
THE REGRESSION EQUATION VARIABLES WITH THE
CRITERION. FEMALES: N = 76

Variable	r	η	F	p
R	.501	.528	0.98	-
SW	.418	.459	1.21	-
W	.410	.461	2.14	-
Sa	.051	.101	1.39	-
Phys	.071	.201	3.76	*
Stngr	.080	.194	2.99	*
YS	.150	.197	1.08	-
E-N	.020	.107	1.98	-
Ie	.054	.113	1.57	-
Educ	.112	.181	1.68	-
PEd	.181	.230	1.31	-
HsW	.124	.219	2.63	-
Psy	.296	.350	2.24	-

(- = N.S.; * = .05)

Tables XVI and XVII. It can be seen by comparing with High-

TABLE XVI

MEANS AND STANDARD DEVIATIONS FOR NON-COGNITIVE TEST
VARIABLES: SIMULATION GROUP - MALES. N = 20

Variable	\bar{X}	S	Variable	\bar{X}	S	Variable	\bar{X}	S
Maudsley			Strong			PA	47.1	5.1
N	3.8	1.8	Art	19.7	7.7	YS	41.2	8.6
E	31.8	2.2	Psy	30.5	7.9	SST	47.9	7.9
E-N	58.0	4.6	Acht	20.3	8.4	SS	40.0	7.7
California			Phys	27.3	8.1	SW	46.2	5.4
Do	31.9	3.7	Ost	30.5	8.1	Min	38.4	8.4
Cs	22.8	2.4	Den	19.5	7.9	Mus	36.0	8.5
Sy	27.6	3.9	Vet	18.4	8.1	CPA	31.0	8.9
Sp	34.9	4.1	Mth	16.0	8.0	SCP	37.0	8.1
Sa	22.8	3.0	Pht	8.6	7.0	Acc	33.3	8.0
Wb	41.0	2.1	Engr	16.3	7.9	OM	39.1	7.6
Re	34.3	2.9	Chm	18.0	6.8	PA	26.7	8.1
So	40.4	3.6	PM	32.5	6.3	Ban	32.7	7.7
Sc	38.7	4.9	Frm	26.8	6.9	Mor	32.7	7.9
To	25.5	3.8	Avr	23.1	7.4	Pha	27.3	7.2
Gi	29.6	5.1	Cpt	18.5	8.1	SM	34.3	7.6
Cm	26.0	1.2	Pri	33.5	7.0	RES	34.9	6.3
Ac	31.7	3.2	MthT	35.3	7.3	LIns	37.5	7.1
Ai	20.4	2.3	IAT	16.1	8.8	Adv	33.5	6.0
Ie	41.6	2.1	AgT	25.7	8.1	Law	36.1	4.9
Py	11.8	1.9	Pol	34.7	7.6	A-J	28.8	5.1
Fx	9.6	2.6	For	24.9	8.1	Pres	27.3	6.4
Fe	19.0	3.5	YPD	40.9	8.2	OL	54.1	4.2
			PD	44.1	6.1	MF	38.1	6.5

rated means (Tables V and VII) that most of both the discriminating and the non-discriminating scales are altered in the direction of suitability, some appreciably so. The latter scales, although not directly meaningful in terms of Parts B

TABLE XVII

MEANS AND STANDARD DEVIATIONS FOR NON-COGNITIVE TEST
VARIABLES: SIMULATION GROUP - FEMALES. N = 16

Variable	\bar{X}	S	Variable	\bar{X}	S
Maudsley			Strong		
N	3.5	1.9	SW	44.7	5.2
E	32.1	2.4	Psy	34.1	5.0
E-N	58.6	6.2	Law	35.2	6.8
California			SST	45.1	6.2
Do	32.6	3.9	YS	39.6	5.8
Cs	23.8	2.3	LInS	30.4	6.9
So	28.0	3.5	Buy	22.6	6.2
Sp	35.4	3.6	HSW	18.7	4.1
Sa	23.2	2.3	EIT	29.1	5.8
Wb	42.1	1.8	Off	23.2	5.3
Re	36.0	3.4	Stg	25.1	3.1
So	41.9	2.9	BEdT	29.3	5.0
Sc	40.1	4.9	HEcT	24.6	4.9
To	26.6	2.4	Dtn	23.4	6.1
Gi	31.1	5.2	PEdT	26.4	6.2
Cm	25.7	1.3	OT	29.7	5.9
Ac	32.4	3.3	Nur	29.0	6.3
Ai	20.9	2.4	MthT	26.8	5.9
Ie	42.6	2.0	Den	21.3	6.1
Py	12.4	2.0	LT	24.6	6.3
Fx	8.9	3.0	Phys	35.1	6.4
Strong			MT	31.6	6.6
Art	23.4	6.4	Mus	29.9	6.7
Ath	27.6	6.5	PhyT	34.7	5.2
Lib	29.1	6.1	Engt	24.2	3.8
ET	38.0	5.9	MF	44.6	3.1

and C, may provide confirmation of distortion on the more relevant discriminating scales. Comparisons between High and Simulation means are facilitated by inspection of Figures 9 to 12.

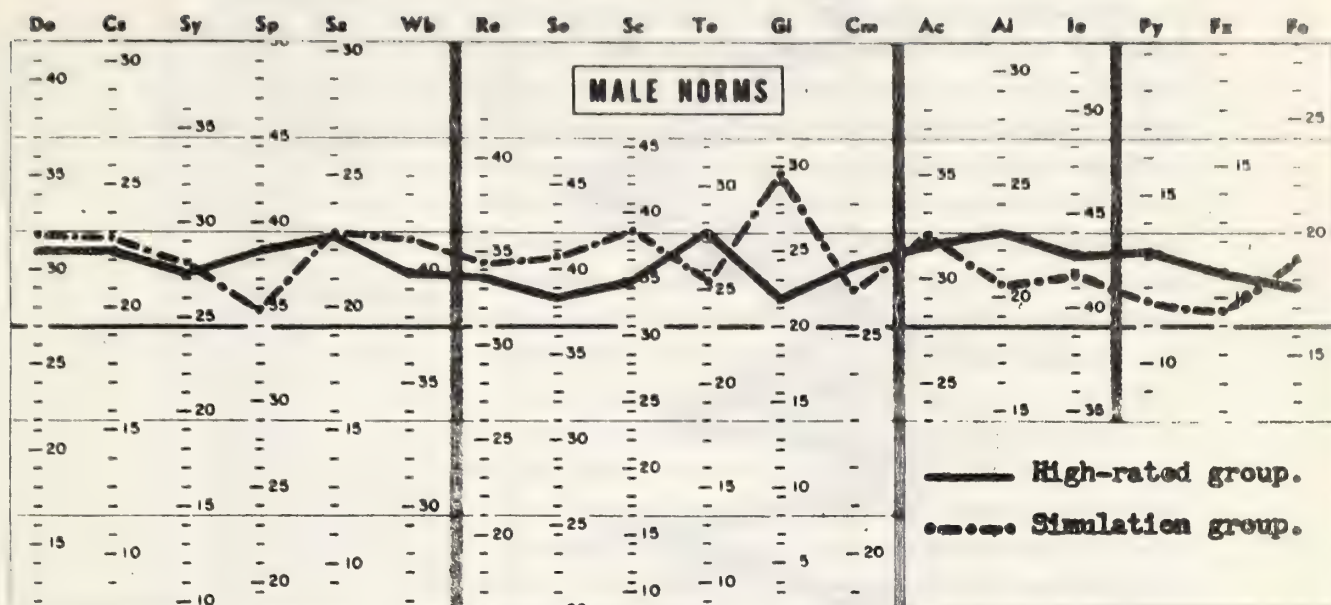


Figure 9

California Psychological Inventory High and Simulation Group Mean Profiles.
Male Samples.

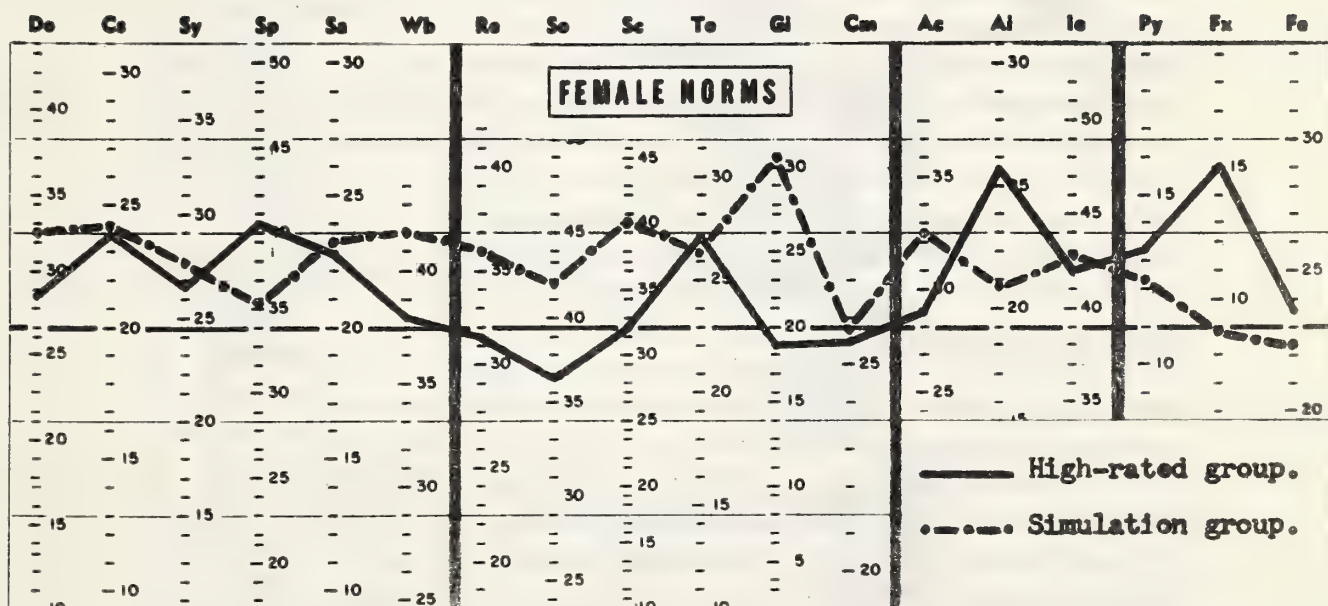


Figure 10

California Psychological Inventory High and Simulation Group Mean Profiles.
Female Samples.

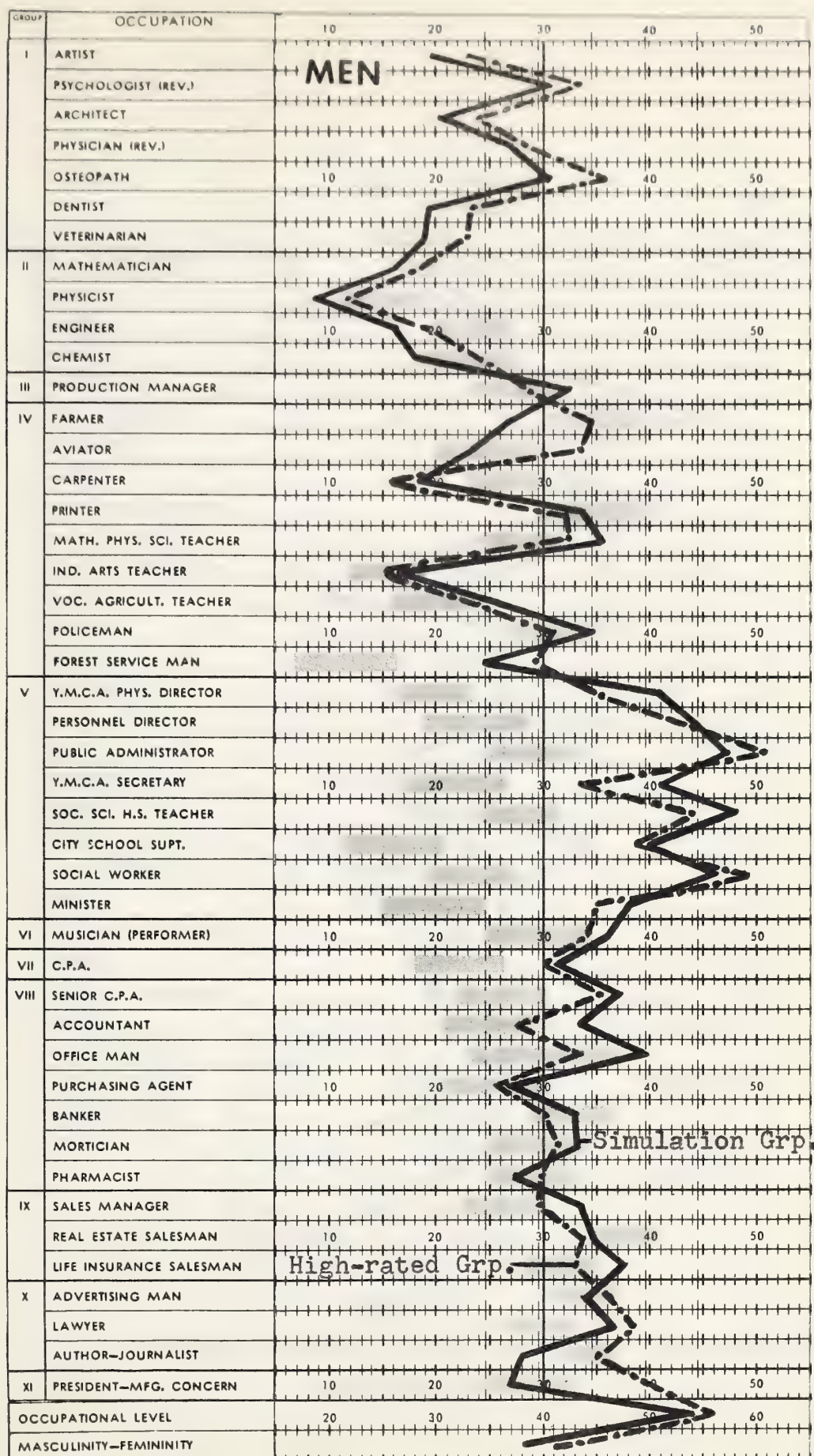


Figure 11
Strong Vocational Interests High and Simulation Group Mean Profiles.
Male Samples.

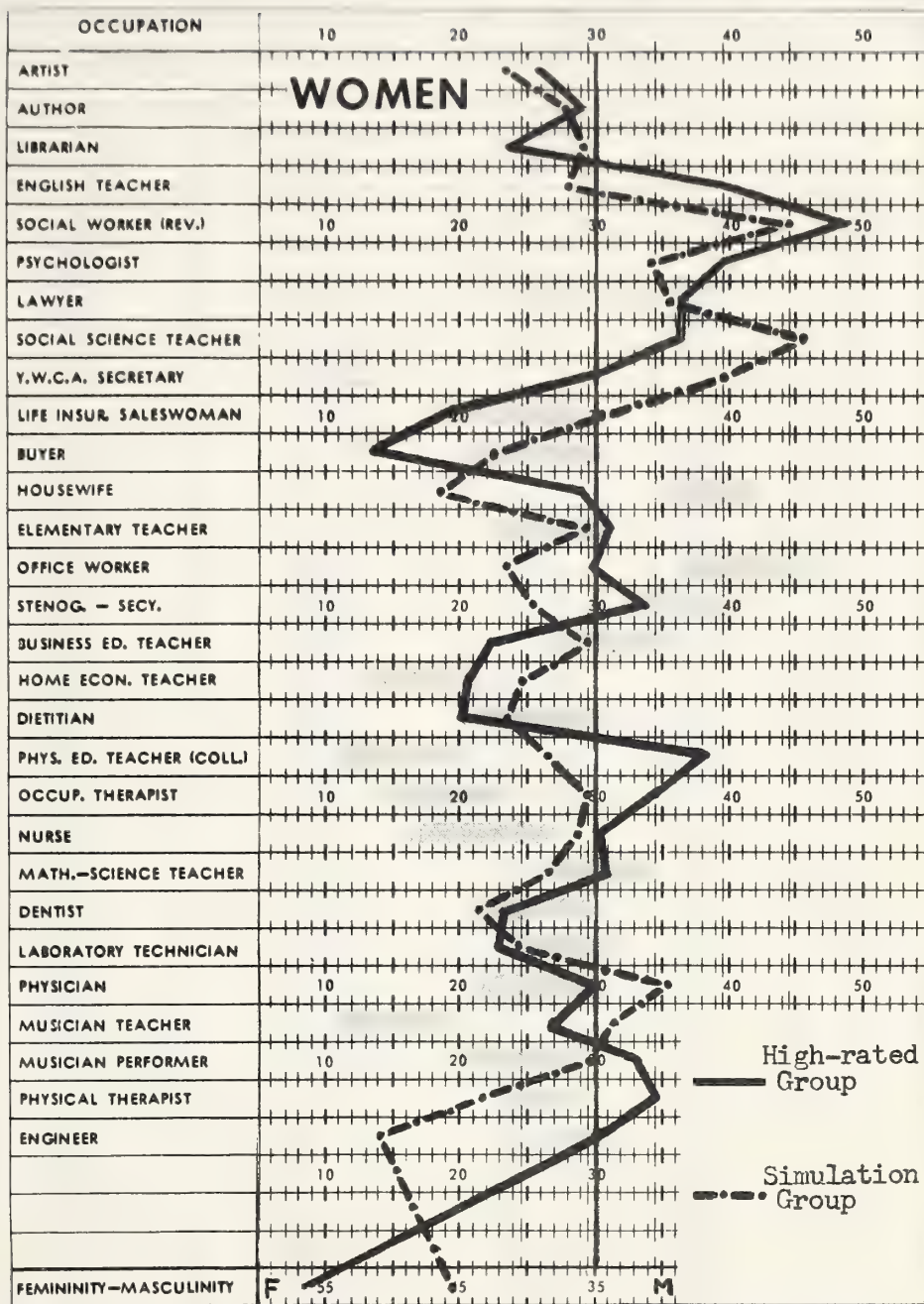


Figure 12

Strong Vocational Interests High and Simulation Group Mean Profiles.
Female Samples.

TABLE XVIII

SIMULATION AND HIGH-GROUP MEANS FOR REGRESSION EQUATION AND
DISCRIMINATING VARIABLES WITH RESULTS OF SIGNIFICANCE
TESTS OF THEIR DIFFERENCES. MALE SAMPLE

Variable	Simulation \bar{X}	High \bar{X}	t	p
PA	47.1	50.7	1.38	-
OL	54.1	55.9	1.12	-
SW	46.2	48.6	1.08	-
PD	44.1	43.0	.58	-
To	25.5	27.6	1.45	-
Ie	41.5	42.8	1.76	-
A-J !	28.8	33.5	2.51	*
Law	36.1	38.6	1.11	-
N	3.8	13.7	5.23	**
E	31.8	26.4	3.08	**
E-N	58.0	42.8	4.16	**
Do	31.9	31.0	.89	-
Cs	22.8	22.4	.71	-
Sy	27.6	27.2	.54	-
Sp !	34.9	38.4	3.19	**
Sa	22.8	22.6	.24	-
Wb	41.0	39.8	1.31	-
Re	34.3	33.5	1.04	-
Ac	31.7	31.3	.69	-
Ai !	20.4	23.0	2.79	**
Py !	11.8	13.2	3.28	**
Psy	30.5	34.8	1.81	-
Phys !	27.3	33.6	2.11	*
Frm	26.8	29.6	1.51	-
Cpt	18.5	16.5	.91	-
Pri	33.5	33.7	.12	-
IAT	16.1	16.4	.21	-
AgT	25.7	25.3	.69	-
Pol	34.7	31.9	1.64	-
For	24.9	27.9	1.20	-
SST	47.9	44.5	1.41	-
SS	40.0	38.8	.97	-
CPA	31.0	30.9	.09	-
Adv	33.5	35.2	.36	-

(- = N.S.; * = less than .05; ** = less than .01)

TABLE XIX

SIMULATION AND HIGH GROUP MEANS FOR REGRESSION EQUATION AND
DISCRIMINATING VARIABLES WITH RESULTS OF SIGNIFICANCE
TESTS OF THEIR DIFFERENCES. FEMALE SAMPLE

Variable	Simulation \bar{X}	High \bar{X}	t	p
SW	44.7	48.5	2.00	-
Sa	23.2	22.8	.42	-
Phys	35.1	30.1	2.12	*
Stg	25.1	33.7	7.13	**
YS	39.6	29.8	4.47	**
E-N	58.6	42.8	6.29	**
Ie	42.6	42.1	.61	-
PEdT !	26.4	38.2	5.11	**
HSW	18.7	29.0	7.88	**
Psy !	34.1	39.8	2.82	**
Sp !	35.4	40.5	5.19	**
Gi	31.1	18.8	5.29	**
Ai !	20.9	25.7	4.91	**
Fx !	8.9	15.1	5.41	**
ET	38.0	39.1	1.02	-
Law	35.2	35.6	.31	-
SST	45.1	35.9	4.54	**
Buy !	22.6	13.7	3.81	**
Off	23.2	29.9	2.54	*
HEcT	24.6	20.6	1.80	-
Dtn	23.4	20.2	1.56	-
PhT !	34.7	39.4	2.21	*
Engr	24.2	29.9	1.91	-

(- = N.S.; * = less than .05; ** = less than .01)

Of the 34 non-cognitive test variables in the male sample displaying either a significant mean difference between the High and Low groups or included in the regression equation 29 or 85.3% proved to be apparently fakable while

16 or 70.0% of the 23 comparable female variables proved so (Tables XVIII and XIX). The hypothesis that the majority of such variables would prove apparently fakable is therefore accepted for both samples. A significant difference suggests fakability if its in the direction of suitability, not otherwise. Thus all variables except those marked with a ! are apparently fakable in the present context. On only one male regression equation variable, A-J, and two female ones, PEdT and Psy, does it appear difficult to simulate the higher-rated worker's scores. Discriminating variables appear equally fakable with only Sp, Ai, Py, and Phys for the male sample proving difficult to distort in the instructed direction and Sp, Ai, Fx, Buy, and PhT for the female sample. Figures 9 to 12 provide evidence for the fakability of other variables not directly relevant to the present hypothesis but discussed further in Chapter V.

CHAPTER V

DISCUSSION

PART A. PSYCHOLOGICAL DESCRIPTION OF WELFARE WORKERS1. Intelligence

The similarity of the welfare workers' Valentine scores to British trainee teachers and Wonderlic scores to fourth-year American college students would indicate intellectual ability of about (North American) first degree level. (British university students represent a higher, narrower segment of the intelligence continuum and are thus less comparable than the American undergraduates). It might be expected that graduate social workers would represent a slightly higher ability level than that indicated for the present welfare worker samples. Kidneigh and Lundberg (1958) found social work students had academic interests and abilities similar to fifth-year psychology, nursing, and education students. Some difference presumably exists therefore between the welfare and social worker groups, in this respect at least. Educational level is not that sensitive a measure however, for although males possess less university training than the female workers, (42% having degrees/diplomas compared with 78.6%) they achieved scores equal to or higher than the latter.

It is possible that anonymity, which was hoped would promote typical responses on the non-cognitive tests, did not promote maximal responses on the ability tests. The reduction of "ego" involvement and inability to learn individual scores may have depressed motivation, and hence scores, a little, although probably mostly in the duller Ss. Valentine (1954) points out that his test requires "not only ability but continuous concentration and a keen desire". A number of Ss did report considerable fatigue towards the latter problems. The time element in the Wonderlic, too, could prove too much to "worry" about for the unmotivated. The average scores for these workers should, therefore, possibly be even a little higher, but this is speculative. However, to the extent that workers can apply their capacities in practical situations more at their own rate such test results may not reflect fully on-the-job reasoning ability although there is undoubtedly considerable correspondence.

2. Personality

(a) Maudsley Personality Inventory. The neuroticism factor (N) is said to be a measure of general emotional lability or overresponsiveness indicating a neurotic breakdown potential under stress. It is thought to reflect high

autonomic reactivity. The below average N scores achieved by the welfare workers is not in complete agreement with Sauna (1963) and Roe (to be published) who found social workers above average on this trait but does support their findings that male workers score relatively higher than females. Non-professional welfare workers however may represent a less anxious, less insecure group since they have either not desired or been able to seek the higher degree. Rettig and Salomon (1960) found social workers aspire to a higher status than that accorded them in the professional milieu. Welfare workers are not in this competitive climate to the same degree. Within their own ranks however the average male welfare workers could possibly experience some discomfort in an environment in which the female workers are typically first degree/diploma holders (while they are not) thus accounting in part for their relatively higher (though still below average) N scores.

A better perspective of the actual comparability of welfare worker and normal groups is obtained by noting the mean scores for certain psychiatric groups, e.g. hysterics - 30.8, psychopaths -35.6, and dysthymics (the openly fearful, worried, anxious individual) -38.1, all markedly higher than either. Standard deviations for the workers proved less than

normals and psychiatric groups suggesting their relative homogeneity in this respect.

The extroversion factor (E) is said to be a measure of one's outgoing, uninhibited, social proclivities with introversion as its converse. One neurological basis is thought to be the rate cortical satiation dissipates being low for extroverts and high for introverts. The scores achieved by welfare workers, placing them between English and American normals, although consistent with the national stereotype, does not differentiate welfare workers as a group except insofar as their standard deviations were again less than the normative groups. Mean E scores for the psychiatric samples were, when compared to welfare workers, lower for dysthymics (17.9), similar for hysterics (24.9), and higher for the psychopaths (30.8). It is therefore apparent that comparisons are most meaningfully made on a two dimensional basis, considering both N and E scores together. Figure 13 shows welfare workers to fall at a point presumably representing a minimum or absence of dysthymic-hysteric features, i.e. calm, forthright, confident.

The correlation between N and E, expected theoretically to be zero, was $-.303$ for males and $.142$ for females. Eysenck

Maudsley Personality Inventory

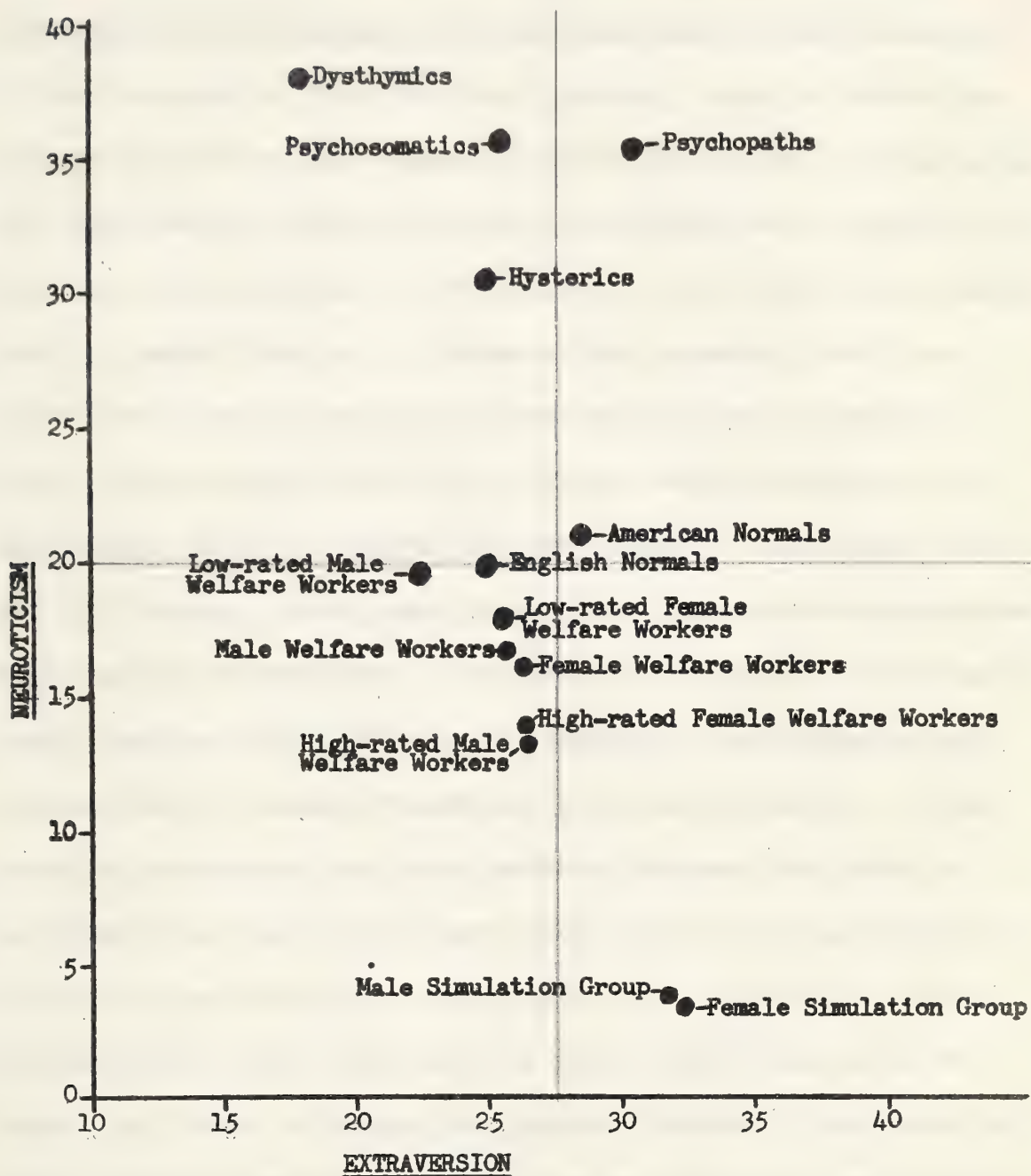


Figure 13

Mean M.P.I. Extraversion and Neuroticism Scores for Psychiatric, Normal, Welfare Worker, and Simulation Groups plotted on two-dimensional graph.

(1959) reports that slight negative correlations are common and originally explained this as being due to non-linearity of the regression lines at low E values, where N values are higher than expected. Separate correlations for the sexes are not reported but possibly mixed populations would separate to provide values similar to those above. This view is strengthened by recent work of (1) Eysenck and Eysenck (1963) who found the E scale composed of impulsivity and sociability items (there being more of the latter) which correlated respectively slightly positively and slightly negatively with N and (2) Siegman (1963) who found E scores correlated positively with impulsive behaviour in delinquent males but not in delinquent females, postulating a difference in male-female responses due to social forces and role expectations. It is possible therefore that male welfare workers, who tend to have low N scores if they have high E scores, check a preponderance of sociability items, especially compared to delinquents, while the female workers check relatively more impulsivity items, although they average higher E and lower N scores than the male workers. Thus by adjusting the sociability to impulsivity item ratio on the E scale orthogonality with N could result for mixed general populations but

correlations could be either positive or negative for particular sub-groups (male, female, or mixed) depending on their positions on sociability and impulsivity continua.

(b) California Psychological Inventory. A recent, second factor analysis of the C.P.I. by Mitchell (1963) concluded the 18 scales or 1st order variables to be inappropriately labelled in certain cases and to represent mixed attributes. Five 2nd order factors were obtained which were also found to underly Cattell's 16 PF test. These were: general adjustment vs. neuroticism (Wb, Sc, To, Gi, Ac); extroversion (Do, Cs, Sy, Sp, Sa); intellectual resourcefulness (To, Ai, Ie, Re, Py); emotional sensitivity (Fe only); and superego strength (So, Fx(-)). For the sake of parsimony and integration with M.P.I. results some description of welfare workers will be in these terms. Some justification for this approach is provided by Stewart (1962) who found psychosomatics low on all 5 C.P.I. adjustment vs. neuroticism scales but average on all its extroversion scales. Eysenck (1959) places psychosomatics at $N = 35.7$ (high); $E = 25.4$ (average) which is virtually equivalent (Figure 13).

Reference to Figure 14 shows the male welfare workers profile to be relatively flat and slightly above average in

terms of adequate social and interpersonal functioning. (The mean profile for a socially inadequate group (prisoners) is included for contrast). The moderately higher scores on Cs, Sa, To, and Ai would indicate, in Gough's interpretation, that the average male worker was "ambitious, forceful, versatile, communicative, outspoken, fluent, self-accepting, tolerant, foresighted, and independent". In the main these characteristics describe Mitchell's two factors of 'extroversion' and 'intellectual resourcefulness'. The relatively low So and higher Fx scores however indicate a 'superego strength' possibly below that expected in such a group. However this "weakness" is even more apparent in the female sample (Figure 15) while the factors of 'intellectual resourcefulness' and 'extroversion' are apparently higher (e.g. Sp, To, Ai, Ie,).

There would seem to be an inverse relationship in this occupation between the superego factor and the other two factors mentioned which may be partially explained by considering the terms describing high So and low Fx scores:

"serious, industrious, modest, conscientious, steady, cautious, rigid, tradition-bound, and conforming" which somehow portrays insufficient outgoingness and adaptability to characterize to any extent the requirements of welfare work. The female

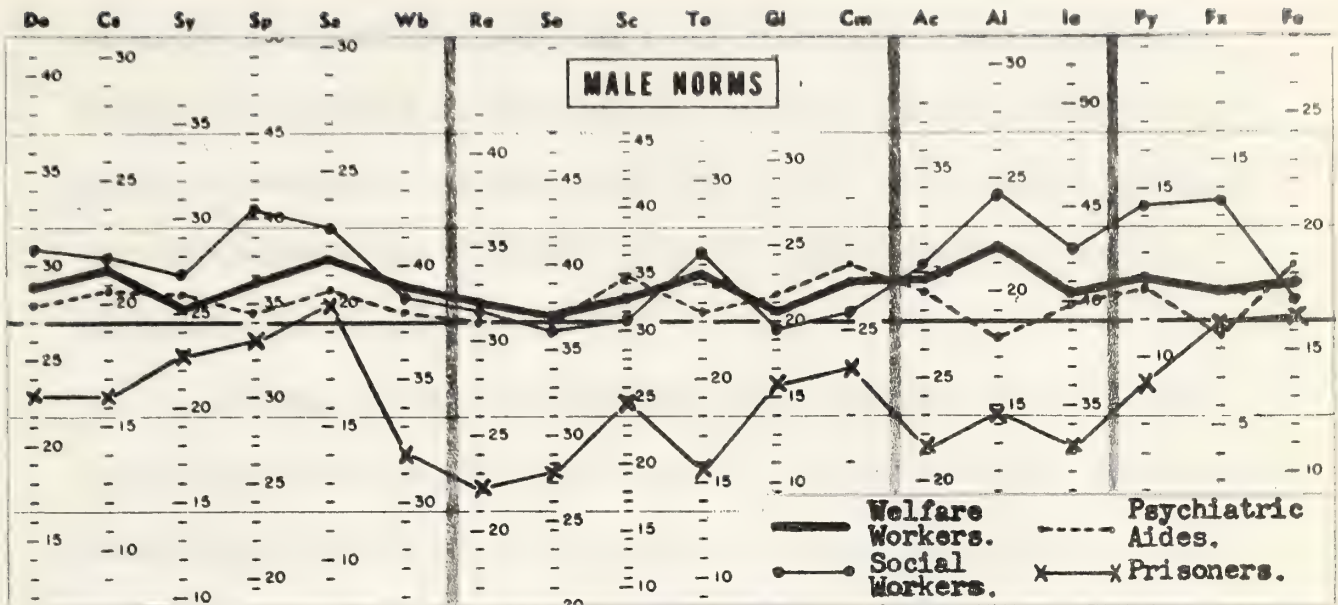


Figure 14.

Mean score Profiles on C.P.I. for Welfare Workers, Social Workers, Psychiatric Aides, and Prisoners. Males.

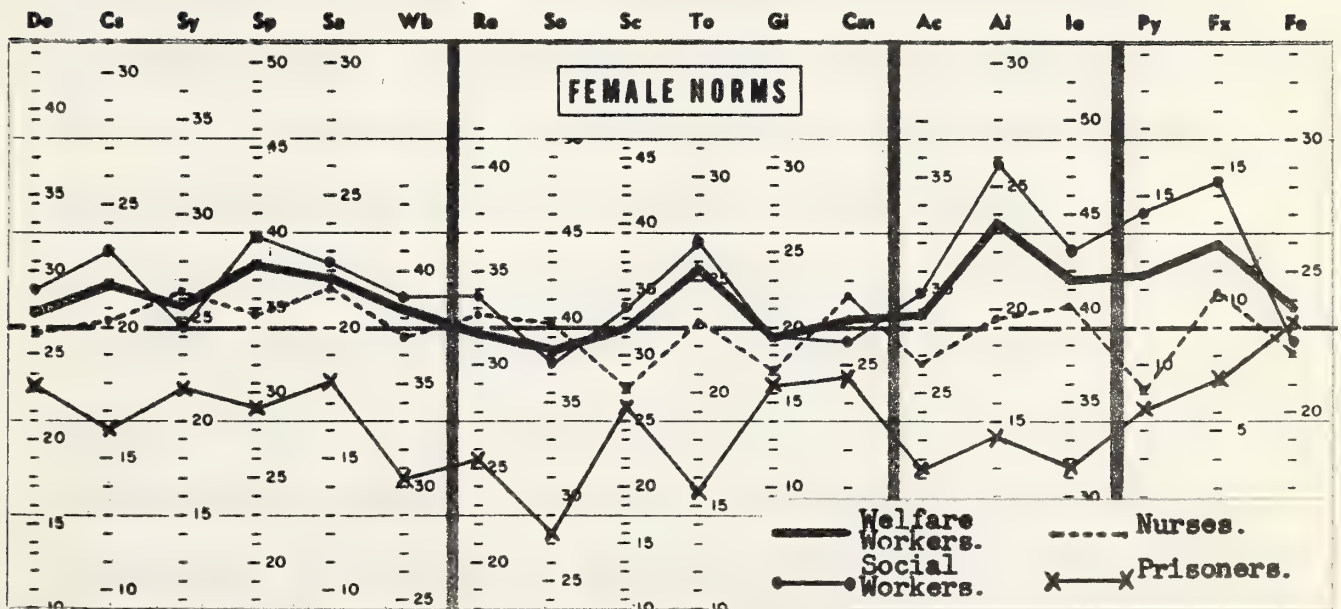


Figure 15.

Mean score Profiles on C.P.I. for Welfare Workers, Social Workers, Nurses, and Prisoners. Females.

sample's "highs" indicate they are even more "enthusiastic, imaginative, quick, informal, forceful and self-reliant" compared to women in general than the males workers are compared to the average man. Direct male to female comparisons are difficult to interpret.

It may be noted that the female group, with a lower "superego" pattern has the lower, but still average, general adjustment pattern (note Wb, Sc, Gi, Ac) in relation to self-sex norms. It is as though some freedom, activity, and resourcefulness are released by a lowering of normally inflexible "superego" guards only to be accompanied by a raised anxiety level, which, being slight however, may function merely as a motivator. The male sample displays this also to a lesser extent. The apparent inconsistency between the C.P.I. and M.P.I. "adjustment" findings suggests different concepts are involved, which no doubt overlap to some extent.

Figures 14 and 15 also allow comparisons with the comparable "helping-professions" of nursing and social work. As might be expected welfare workers place mainly between these two normative groups in general social behaviour adequacy. Sp, To, Ac, Ai, Py, and Fx appear to most differentiate the female social workers and welfare workers from the nurses

while only To and Ai are of similar value for the males. Do, Sy, Sp, Ie, Py, and Fx means are considerably higher for the male social workers than for the welfare workers and aides who are quite alike in these regards. Educational differences alone do not appear to account for these patterns. The low 'superego': high 'extroversion-resourcefulness' relationship is thus even more marked in social workers than welfare workers, while the 'adjustment' factor remains (relatively) depressed. The C.P.I. concept of neuroticism (via Mitchell) may therefore be more comparable to that provided by the MMPI and 16 PF tests, on which social workers were also found to be above average, than that of the M.P.I. on which they were not.

The highest C.P.I. - M.P.I. correlations are between Sp and E (.56), Sy and E (.51), and Sa and E (.53) for females and also for males, but slightly lower (.41, .40, and .45 respectively). C.P.I. class I variables would therefore, as suggested by Mitchell, appear to represent an extroversion factor. The correlations between Sc and E were .02 and -.41 respectively for males and females. Hence, although the raised proportion of sociability E items, thought endorsed by male welfare workers compared to delinquents, evidently did not reflect itself in a greater absolute proportion compared

to female workers, it would appear that the impulsivity proportion was reduced for males and increased for females, at least to the extent that these same characteristics are measured by C.P.I. scales of comparable name.

3. Interests

The mean standard score achieved by each occupation on its own scale on the Strong is approximately 50. Comparison of mean welfare worker scores to this value on each scale provides one interpretive approach. Unfortunately pure chance responding to the Blanks results in varying scores for each scale hence it is easier to approach 50 on some scales than others. Inter-scale comparisons should therefore consider this effect while inter-sample comparisons on any single scale can be made directly.

Figures 16 and 17 show the mean male and female welfare worker scores compared with people-in-general and social workers. The obvious cluster of high scores for the male sample in the social services category (Group V) are virtually the only ones reaching the B (score 35) or higher categories. The fluctuations within this group of occupations appear to follow the chance response pattern similarly for all three samples indicating little real meaning in different mean scores

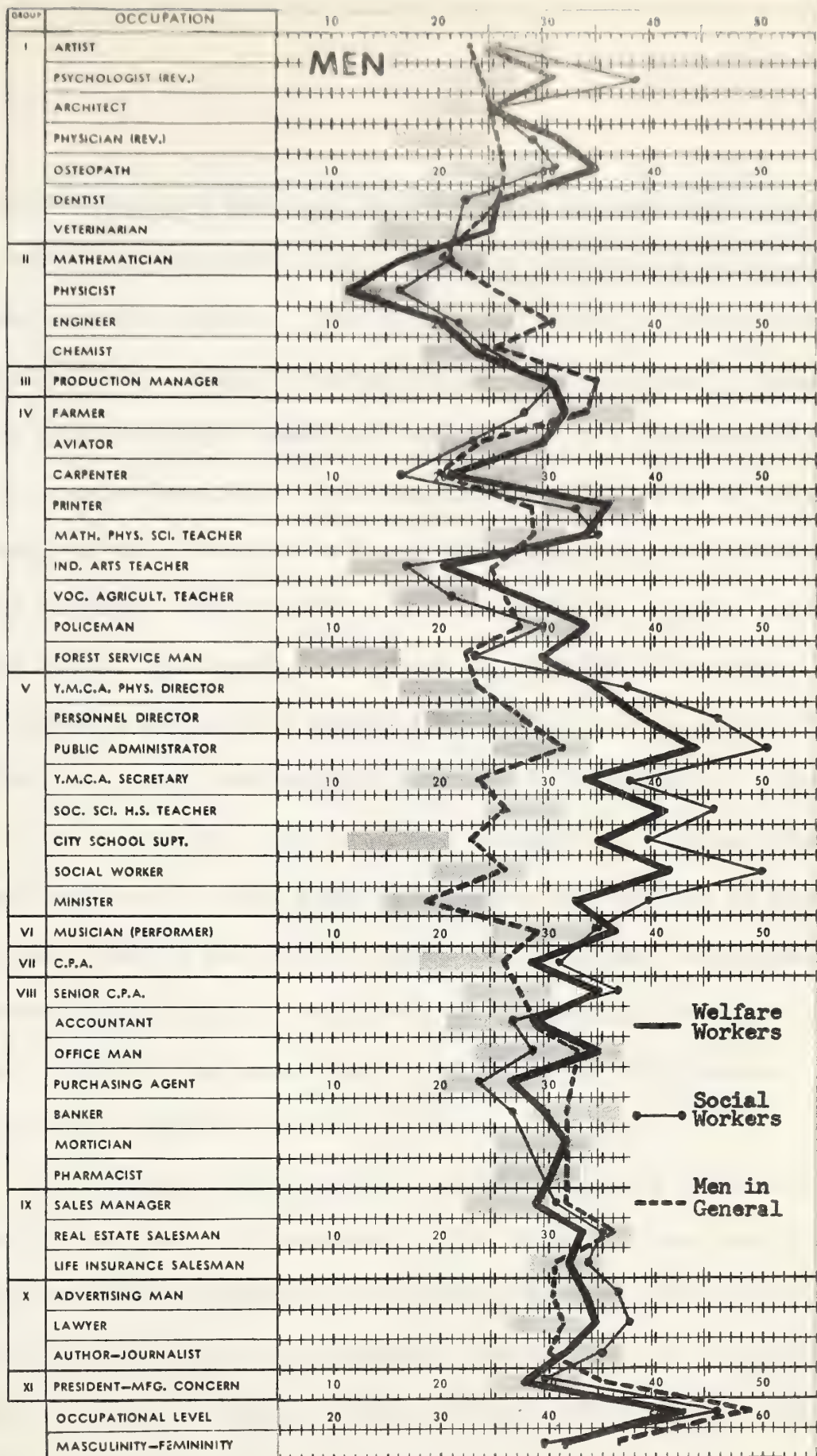


Figure 16.

Mean Score Profiles on Strong Vocational Interests for Welfare Workers, Social Workers, and Men-in-General.

therein for any one sample. Male welfare workers fall a little short of but approximate social workers' interests with respect to working with, guiding, and directing people in their interpersonal affairs, when compared to people in general. There are two other similar areas of comparison: the Psychologist and Group X occupations which together combine features of interpersonal activity with verbal and abstract conceptualization. Welfare workers have interests that exceed the general public's in this regard but again fall short of the social workers. The one other area allowing a meaningful comparison is Group II (physical science, non-personal) on which this group's interests are considerably less than men in general. These findings are very similar to that reported for social workers by Lewis (1947) and Gravitz and Mintz (1958) on the Kuder Vocational Preference Record and by McCornack and Kidneigh (1954) on the Strong. Conclusions were they liked "contact with people, verbal activities and disliked physical sciences".

The average female welfare worker displays a pattern similar to the men with respect to the interpersonal and linguistic interests underlying the Social Worker, Psychologist, English Teacher, and Social Studies Teacher scales, placing between the general public and social workers. Scores in the

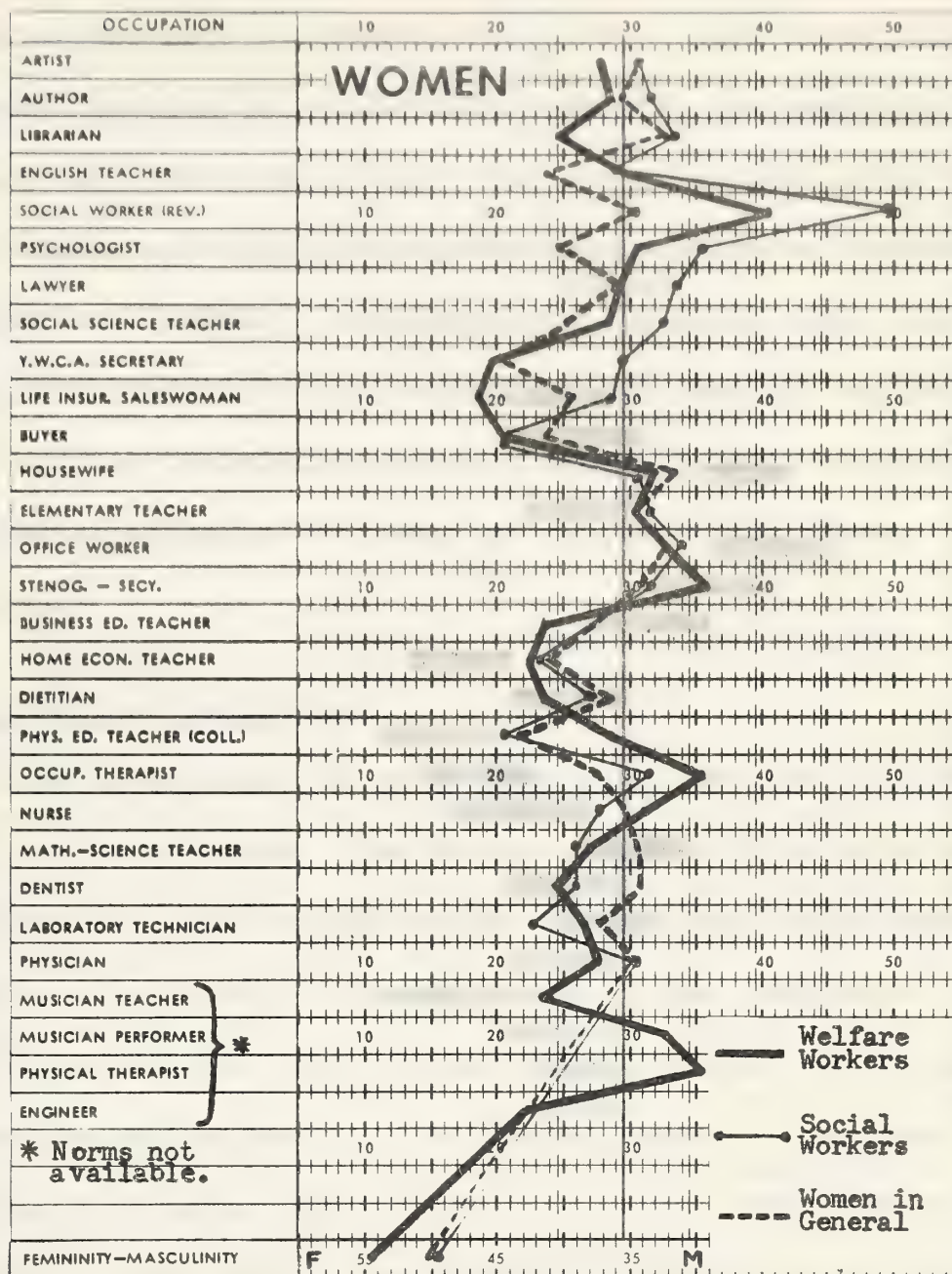


Figure 17.

Mean Score Profiles on Strong Vocational Interests
for Welfare Workers, Social Workers, and Women-in-
General.

negative direction, relative to the public, were mainly those suggesting aversion to commercial, numerical and technical involvement (e.g. LInS, Buy, MSCT, Den and LT scales) which further characterizes this group as people-oriented rather than material-oriented. Reflecting this also is their above average score on the Occupational Therapist scale; the low Dentist and Lab Technician scores indicating it is the personal not the material aspects of such an activity that proves attractive.

4. Biographical Variables

Some interpretation of biographical findings (Tables I and IV) may be advanced. The fairly equal ratio of male to female workers could suggest either the welfare field generally is equally attractive to the two sexes or that particular sections of the work call for one sex primarily thus determining the agency's hiring policy. The larger number of men over thirty years probably results from the faster attrition rate for female workers due to marriage and pregnancy in the twenties. This may also account for the longer length of service noted for male workers. Finally, the female predominance of degree/diploma holders is partially explained by the number of ex-police officers without such qualifications (but

considerable "welfare" experience) who enter the field upon retirement from such as the R.C.M.P. There is not a comparable source of female workers. This may also be a factor in the age discrepancy. Some relevance at this point attaches to Kidneigh and Lundberg's (1958) conclusions that neither age nor experience were important factors in social work students' progress and proficiency although as a group they were older than those entering other vocations.

Part B. Psychological Discrimination of High-rated from Low-rated Welfare Workers

The degree to which supervisors apparently distinguish the suitable from the less suitable in this interpersonal occupation on the basis of intellectual ability primarily is in agreement with studies of similar occupations e.g. Grygier (1956), Cuadra and Reed (1957), Cliff, Newman and Howell (1959), Rosenberg et al (1962). This quality apparently bears the major relationship with such a criterion unless, of course, it was "fallen back upon" by supervisors who found the amorphous nature of this complex criterion prevented more comprehensive ratings. It is to be noted however that it was reasoning ability (mainly deduction) rather than the more general Wonderlic measure of ability or Educational level that most discriminated these groups and that three Interest variables

separate the two intelligence measures. This suggests that comprehensive ratings were applied, incorporating a variety of suitability facets, possibly assisted by the multi-rater condition of the study. Consistent with the aforementioned studies however, personality variables were generally not too discriminating. This, and the significance of the interest differences agrees with Abeles (1958) and Severin (1952) who found non-personality measures predicted rating criteria significantly better than personality measures.

The interest variables most discriminating the male workers likely represents the interest of the High-rated workers to organize and guide the affairs of others (PA) with a minimum of direct control (SW) but in a "professional" manner (OL). The capacity to also accept supervision themselves however is indicated by the Ac variable proving considerably more discriminating than Ai (in spite of the higher score welfare workers obtain on the latter). The similar value of To again suggests an ability to "get-along" and conform when appropriate. The relatively discriminating Cpt and For scales (in the negative direction) seems to support this view: the lower rated workers (who score higher on these scales) finding it more difficult to tolerate rules and interpersonal conflicts, and thus seek the independence these

represent.

The M.P.I. scales were moderately discriminating for the male sample with the derived E-N score more so than either alone. Male workers are thus presumably relatively heterogeneous with respect to the qualities underlying this value; highly rated workers obtaining both lower N scores and higher E scores with the latter apparently weighted more with sociability than impulsivity items (if one is guided by the High and Low C.P.I. means on Sy, So, and Sc). He is thus a relatively calm, secure, other-person oriented individual compared to the lower rated workers, with the deductive capacities and interests as stated.

Personality variables (from both C.P.I. and M.P.I.) were even more superfluous for the female sample discrimination, only Ai and Fx proving of moderate value and Sp somewhat less (Table VIII; Figure 7). Interest variables (Figure 8) were of greater value, however, with Sw, Psy, Law, and SST again quite discriminating. The Engr and PEdT scales also attained relatively high positions in the rank order list (Table VIII) and could relate to an energetic, active characteristic in the higher rated female workers. This is reflected also in the high positions of Ai and Fx which, compared to Ac and To, prove more discriminating than in the male sample.

Figure 5 shows the consistent, high C.P.I. mean values for the male High group relative to the Low group, compared to the frequent reversals of the female profiles (Figure 7), in particular on So, Sc, and Gi. Thus the (relatively) low socialization/high impulsivity characteristic noted for the "average" female welfare worker is even more pronounced for the "high-rated" female welfare worker. This is seen also in the similar profile of the graduate female social workers noted in Figure 15. It is not reflected in a discriminating E or E-N score however, for this sample, and would suggest that the sociability to impulsivity item ratio in E did not favour discrimination for female workers (too few impulsivity items) while it did for the males, who were evidently discriminated by the more numerous sociability items in E. Such hypotheses would require item analyses for verification.

Compared with the low-rated group the high-rated female worker is thus relatively active, independent, flexible, and socially unrestricted - these qualities being more important as discriminators (along with the deductive reasoning ability and particular interests) than the tolerance, conformity, and sociability qualities which discriminated the males. Both the male and female samples could, of course, possess many or most

of the qualities which are discriminative for the opposite sex (except where such qualities are extremes of the same continua). For example the female workers may possess adequate tolerance characteristics - but homogeneously.

Part C. Multiple Regression Analysis

An inspection of the variables constituting the regression equations (Tables XII and XIII) shows the difficulty in anticipating which variables account most for independent portions of the criterion variance. Hence R and W, especially in the female sample, prove relatively non-overlapping while Ie is a further independent contributor in the intellectual sphere in both samples. Similarly PA, SW, and PD account, in the male sample for different elements of the suitability criterion, even though these scales (all Group V) appear to measure quite comparable factors. SW and YS represent this situation with the female workers. Although the majority of the predictors came from the apparently more promising half of the 30 variables considered for each group, it is noteworthy that certain less promising variables which possessed very low correlations with the criterion such as Sa (.22), Ie (.23) and E-N (.14) for the females and A-J (.23) for the males, were more predictive than, for example, Psy (.54) and Law (.49).

Thus neither subjective selection of the one variable

with the highest criterion correlation from each category or class of variables, nor elimination of all variables with criterion correlations below some cut-off point, nor variables displaying the most significant t ratios for High-Low mean differences, would appear to provide the best estimates of predictors. These and other intuitive, "face-valid" methods are however, according to Taylor and Russell (1939), Barthol and Kirk (1956), Cronbach (1960), often inappropriately utilized in non multiple regression selection procedures. Factor analysis will also indicate the same "best" predictor variables as multiple regression analyses however (Anderson, 1958). Even the method herein used to reduce the original number of variables apparently did not weight the significance of minimal variable intercorrelation sufficiently, although seemingly enough to include most efficient predictors. A major difficulty lies in being unaware of variable-criterion relationships after the variance due to earlier predictors is accounted for; even the sign of such relationships may be reversed from the original as their discriminative value for the male and female samples. The E-N value, for example, was, when assessed "in parallel" with other variables, discriminating for males but not females, but in the multiple analysis the converse holds.

The sociability element was evidently more efficiently represented for males in some other scale(s) while for females the impulsivity element, though slight, was not.

The regression equations provide an analysis of the qualities of importance in welfare work which in many respects overlaps with that provided by the rank order of discriminating variables. In the female sample however the position of Sa (which was not in the rank order list) is noteworthy. This C.P.I. variable was found by Rosenberg et al (1960) to be the only non-intellective factor predicting social work course success in a multiple regression study. It is said to be a measure of feeling of personal worth which allows independent, confident thought and action and is scored high by the outspoken, demanding, over-confident, self-centered individual and low by the hesitant, self-abasing, passive individual. Figure 14 shows it to be the highest scored scale of male delinquents and thus appears to represent an independent concomitant of unsocialized, impulsive behaviour (note delinquents' So scores) which is possibly represented in the female regression by E-N, hypothesized to be impulsivity-weighted. An opposite trend is apparently represented in the male regression equation (in which Sa is not a factor) by To, high scores

on which indicate a permissive, other-person oriented individual. Sa is apparently more discriminating of females (whether socialized or unsocialized) than males.

The reference here and elsewhere to the "freedom from superego restraints" which seems characteristic of female social workers and the more suitable female welfare workers is not to convey a comparison with the unsocialized delinquent (from which they obviously differ) but rather the contrast between male sample and female sample discriminators or predictors. The more suitable male welfare worker appears to be relatively more empathically, socially, and possibly sociably responsive than lower-rated male workers, compared to such differences in the female sample. The extent of absolute male-female differences however, if any, would require further study to determine.

The possibility of curvilinear predictor-criterion relationships should always be considered but are frequently discounted (Ghisselli, 1963). However, Thorndike (1949) and Ferguson (1959) claim that though possible, they are in fact rarely encountered in personnel research, Thorndike finding none in several years of military selection research. A test of linearity for those predictor variables selected for the

present regression equations was nevertheless made. Results (Tables XIV and XV) confirm Thorndike's and Ferguson's view since only two proved non-linear.

Some adjustment for these might be warranted only if this finding held up in cross-validation and where the multiple R was reduced to a point where improvement following such adjustment was significant. Also, Creager and Miller (1961) found, in reviewing many regression studies, that no significant contribution to prediction of leadership criteria with cognitive or non-cognitive measures was made by interaction variables, while Cronbach (1960) states "nothing is gained by configural formulas (in any case) unless data are uncommonly reliable". Thus the linear model for both individual validity coefficients and for multiple regression equations appears justified.

Since any large pool of items, variables, scales, etc., would likely provide, by chance, some which were discriminating for any group of individuals, a "holdout" group or other comparable samples for cross-validation purposes is necessary in order to determine the degree of shrinkage of the multiple R values. In the absence of such these may remain spuriously high (McNemar, 1955). This effect is somewhat neutralized however when the original validation sample does not represent

that to which the findings may eventually be applied (i.e. a heterogeneous applicant group) but rather the more homogeneous, pre-selected employee group.

Part D. Fakability of the Non-cognitive Tests.

The findings of those studies assessing various tests fakability were confirmed with respect to the "artificial" faking situation (Tables XVI to XIX). All measures taken on the M.P.I. proved fakable with E no more resistant than N (Figure 13). On the C.P.I. 5 male and 7 female scales were endorsed in excess of the High-groups while the majority of the other scales approximately equalled those groups (Figures 9 and 10). Only 5 male (Sp, To, Ai, Py, Fx,) and 4 female scales (Sp, Ai, Py, Fx) were apparently not scored as "much" in the suitability direction as the High groups. Some scales are thus available on this test which may be of value even where motivation to present typical responses is not maximal.

The Strong scales are remarkably simulated in terms of the criterion, especially for the male sample, with Groups II and V in particular closely "copied". (Figures 11 and 12). The effects of the chance pattern must however be considered; it tends to promote the semblance of profile similarity and minimize differences that, under inspection, exist.

The equivalent fakability of the non-discriminative variables in addition to the regression and discriminative variables suggests that rather than conclude the tests concerned to be worthless when certain scores are thought by testees to be desirable, it may be of value to consider just how recognizable is such gross faking. When all scales on all three tests are analyzed a faked pattern emerges. For example, when compared to the High-group profile a combination of very low N, high E, very high Gi, high Wb and Sc, low Sp, Ai, and To, low Avr and A-J, and high YPD and YS in relation to PA and SW would appear to identify the simulation of concern for male testees. For females the pattern is similar except that high Re and So and low Fx are additional C.P.I. signs while To is not discriminating. On the Strong the SST, YS, Buy, and LInS are over endorsed while HsW, Off, PT, PEdT, and Engr score too low by the fakers. Finally, it may be recalled that some research at least would suggest that "real" situation faking is minimal.

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

This study has dealt with a psychometric analysis of a particular category of "helping-profession" - the welfare worker. Since few similar studies, if any, have been reported, little information is available regarding the qualities characteristic of or most suited to this apparently growing vocation. Five paper and pencil type group tests were administered to 69 male and 76 female welfare workers and analyzed separately for the two sexes. The tests used were: the Maudsley Personality Inventory, California Psychological Inventory, Valentine Reasoning Test for Higher Levels of Intelligence, Wonderlic Personnel Test, and the Strong Vocational Interest Blank. In addition, different samples of 20 male and 16 female workers were given the three non-cognitive tests only with instructions to attempt to simulate the responses of a social worker taking such tests when applying for a desired position in welfare. These samples were referred to as the Simulation groups and again analyzed separately. All tests were taken anonymously with scores and ratings aligned by a coding system.

Four hypotheses were advanced which organized the investigation into four somewhat independent sections. The first, Part A, was concerned with a description of the average male and female welfare worker in terms of the variables measured. The relevant hypothesis stated that 'welfare workers would achieve scores on the tests given comparable to the other "helping-professions" but different, in many respects, from those of such as salesmen, scientists, and the socially inadequate, where such norms are provided'. This afforded some structure to the otherwise "shotgun" approach to this aspect of the study. It was concluded that the hypothesis could be accepted since welfare workers did approximate the responses of social workers who, as a group, satisfy the other stipulations of the hypothesis, although the present samples also possess characteristics of their own.

Male workers achieved mean scores which would describe them as of senior undergraduate intelligence, having high interests in verbal and social service activities and little interest in technical, scientific, and selling activities, while being above average in general social behaviour adequacy and below average in neurotic breakdown potential when under stress.

Female workers achieved mean scores similar to the men so may be similarly described. They scored a little lower in deductive reasoning however, and, compared to women-in-general, placed lower on the neuroticism scale and higher on measures of intellectual resourcefulness and extroversion. Their Fx to So ratio and high Ai score suggested a greater impatience with social restrictions than the male workers that was somewhat confirmed by correlations between extroversion and certain C.P.I. scales. This was supported also by various interest findings (e.g. low Librarian, high Phys. Ed. Teacher) which pointed to an aversion to restriction, inactivity, conformity.

The second section of the study, Part B, was concerned with identifying test variables which might discriminate the more suitable workers from the less suitable in terms of a numerical rating criterion. The relevant hypothesis stated that 'the difference between test score means of those workers in the High-rated group and the Low-rated group would be significant on the majority of dimensions measures'. This was accepted for the male sample, for which 55.7% proved discriminating ($p = .05$), but not for the females, for which only 47.3% proved so. The tests chosen thus appeared to provide

enough variables to justify their selection for the particular discrimination concerned, although the M.P.I. and C.P.I. were of less value for the female than male samples.

The most discriminating variable in both samples was the total Valentine score. It appeared the deduction subscore accounted for more of this position than did induction. The male sample was discriminated next best by three Strong scales - SW, OL, and PA while SW, Psy, and Engr were of equivalent value for the females. The Wonderlic followed next in both samples while Ac and To for the males and Ai and Fx for the females proved to be the more discriminating personality variables but of less value than the aforementioned cognitive and interest variables.

The higher-rated male workers' scores would thus describe them as possessing deductive reasoning ability, concentration, and general intelligence; an interest in helping to administer people's affairs and problems on a professional level; tolerance; and the capacity to perform under conditions requiring restraint, to a higher degree than the lower-rated workers. They possess less interest than the latter in technical, non-personal, isolated activities while of course sharing with them many of the non-discriminating characteristics typical

of welfare workers generally.

The higher-rated female workers appear to possess, to a greater degree than the lower-rated females, those cognitive abilities mentioned above, inductive reasoning, an interest in working with and understanding people, flexibility, and the capacity to perform under minimal direction. They possess less interest in domestic and commercial activities but share certain of the typical welfare worker characteristics with the lower rated workers.

The third section of the study, Part C, was concerned with the determination of multiple regression equations for the prediction of the criterion. The relevant hypothesis stated that 'the multiple correlation between the ultimately selected predictor variables, as weighted in the regression equation, and the rating criterion would be significantly greater than zero'. This was accepted for both samples. Of the 74 original male variables 11 were incorporated in the multiple regression compared to 13 of the original 59 female variables.

Approximately one half of the criterion variance was accounted for by the total Valentine score in both samples with PA for the males and SW for the females contributing the next major proportions. The only personality predictors were

To and Ie for the males and Sa, E-N, and Ie for the females. Some of these male-female differences were again discussed in terms of restraint and impulsivity. It was noted that anticipation of predictive variables was difficult since it is independent aspects of the variance which must be accounted for.

The final section of the study, Part D, was concerned with the fakability of the non-cognitive tests. The relevant hypothesis stated that 'the majority of Simulation group mean scores on those variables shown to discriminate the High/Low groups or included in the regression equations would either not differ significantly from or would fall beyond, the comparable High-group mean scores'. This was accepted for both the male and female samples for which 85.3% and 70.0% of the pertinent variables were shown fakable respectively. Many scores not relevant to the hypothesis were also distorted in the "desirable" direction. It was suggested a "faked-pattern" analysis would identify such distortion were it to occur in "vested-interest" situations.

This investigation has thus been an exploratory enquiry of surface-level phenomena the findings of which should be considered tentative, especially until a cross-validation study

can be made. Provided one has sufficient subjects, and time, it would seem that the double cross-validation design, where each half of the total sample serves as the "hold-out" group to assess the multiple regression of the other, is the method of choice in such validation studies. Confirmed findings may then suggest directions for deeper probes into "helping-profession" characteristics and motivations, especially of the non-professional category. Such information could be of value, for example, in scholastic or vocational counselling situations.

Possible areas for further investigation include analysis of the reasons for welfare workers' apparent preference for personal contact, verbal, and abstract activities and aversion to the technical, concrete, and isolated fields. It would be of related interest to determine to what extent their relatively high social presence, tolerance, and achievement by independence characteristics are not reflections only of intelligence and/or educational levels. The importance of reasoning ability for those involved in seeking solutions to personal and social living problems should, since this function was given considerable weight by raters, also be explored further. The use of the Valentine test in studying the more and less proficient of other "helping-groups" (e.g. nurses)

where problem factors may be less obscured, less intangible and where more formula-type solutions are expected, would provide further comparative norms and thus give more meaning to present findings.

Further investigation would seem required to clarify, in particular, the apparent differences (relative or absolute) between male and female workers with respect to impulsivity, independence, and flexibility vs. socialization, tolerance, and conformity. (These two clusters are not necessarily "polar" to each other.) Item analyses of the Extroversion scale plus the administration of other measures of impulsivity and sociability (and/or their converses) to both socially adequate and inadequate groups would hopefully assist such an enquiry. A related enquiry might also be made on the male/female discrepancy on Sa discrimination, possibly in terms of Taylor and Combs' (1952) findings that self-acceptance (i.e. of the reality of one's imperfections) was more characteristic of the well-adjusted than the maladjusted.

The ambiguous relevance of personality variables generally to the helping-professions (compared, for example, to the role of intelligence) could possibly be clarified by asking supervisors to rate workers in terms of suitability,

according to "personality" only, and ignoring as much as possible intellectual differences (even though the latter, if incorporated, may markedly alter any comprehensive rating assigned). Those personality test variables displaying highest correlations with such "restricted" suitability ratings may thus provide a clearer measure of these characteristics.

Another approach to this problem is that of Norman (1961) who constructed, from pools of relevant items, tests which measure only the personality factors determined by factor analysis to underly rating criteria. Various studies (e.g. Tupes and Christal, 1958) indicated that the same set of five personality rating factors invariably emerged regardless of the group rated or rating procedure used. These were Surgency (get-up-and-go), Agreeableness, Dependable Conformity, Emotional Stability, and Cultural Appreciation. Factor analyses of established personality inventories frequently conclude very similar factors. It would be of interest therefore to instruct raters to rate Ss on these 5 particular dimensions as well as on intelligence and interests, separately, and compare results with the overall rating procedure findings. (The present test battery, which incorporates the factors concerned, could be utilized.)

The relevance and application of the present findings or their cross-validated "residue" to other similar situations requires an estimate of validity generalization. For example, the slowly-gathered test data available from an applicant population without the vocational experience of welfare work could be correlated with ratings given subsequent to the influence of several months of such a milieu. This would allow, when compared with present results, a measure of such an influence, if any existed. In addition, an analysis of such test profiles for "fake-patterns" could provide evidence either in support of or contrary to studies suggesting "real-life" faking to be minimal. The effect of the absence of anonymity also on cognitive test results could be examined and compared with that under the anonymous condition.

Finally, it is to be noted that the present research dealt with the concept of the overall, general welfare worker. The value of particular traits for particular specialties (e.g. adoption work, court work, public assistance, ward supervision, etc.) is widely recognized. Further research, where the selection problem extends into the classification problem is therefore undoubtedly required.

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APPENDICES

Appendix 1. - Instructions to Raters.

"The department has been asked to cooperate in a research project designed to provide information about Welfare Workers. Your assistance is requested initially in providing individual ratings of each of your worker's overall suitability and proficiency.

As only general information of an occupational category is required, and not information of specific workers, you are asked to randomly assign a code number to each worker selected from a range of numbers arbitrarily assigned each office. Ratings (and later other data) submitted will thus be associated with such anonymous code numbers and not with worker's names.

Numerical ratings are to be used (as if grading out of 100%) but restricted to the particular values 70 to 79. Please assume that employed elsewhere may be quite adequate workers who, on this basis, would receive ratings from say 50 to 69, but that we have none in this department. Hence ratings of 70 and above refer to considerably competent workers.

An example of what might be received, therefore, from an office with 6 workers, assigned the code number range 230-240 is:

<u>Code Number</u>	<u>Rating</u>
231	73
234	77
235	70
237	78
238	73
239	74

Hence, neither the undersigned nor anyone else could possibly know to whom any particular rating refers (other than each supervisor for his own office). For this reason and the fact that such information can only be utilized for general purposes, the ratings should not be countersigned by or made available to the respective workers.

Appendix 1 - (cont.)

Once all ratings are received two short sets of psychological tests for each worker will be mailed to your office with any necessary instructions. It is important that as each unsigned test is completed by a worker, it be handed directly to the supervisor who will write that worker's code number in the NAME space, unseen by that or any other worker or staff, then placed in an envelope to be mailed with other such tests, to the undersigned. A total of five tests will be sent; one set of three followed a week later by a set of two. Each set will require less than a 2 hour session to complete.

The apparent over-concern regarding anonymity is felt vital in order to guarantee (1) valid, accurate ratings and (2) honest, uninfluenced test data. It can not be over stressed that neither the ratings nor the test responses could ever be related to any one worker or supervisor.

Kindly submit ratings next to appropriate code numbers on attached form. Select any _____ code numbers from the range _____ to _____. The only rating criterion is that of overall welfare worker suitability and proficiency determined on the basis of your experience and judgement. Thank you for your cooperation."

Appendix 2. - Instructions to the Major Groups.

"Your department has been asked to cooperate in a research project designed to provide information about Welfare Workers. This will involve the completion of five psychological tests to be distributed in two sets. All necessary instructions for these are as printed on the tests themselves. They should not be perused until actually commenced nor discussed with others who have yet to complete them. Your supervisor will arrange for the timing of the two tests which have time-limits.

It is important that all workers realize that this research seeks to discover the true interests, personalities, and abilities of Welfare Workers generally and does not seek information of specific individuals. For this reason you are asked to not identify yourself by name on any of the answer sheets. However, since test results are to be correlated with proficiency ratings, a coding system is being utilized to align tests and ratings, the latter having been already obtained, identified only by such code numbers. Hence neither this researcher nor any higher administrative staff could determine the specific source of any particular test or ratings.

Supervisors have been asked to place each completed test in an envelope immediately after writing (out of all workers' view) the appropriate code number in the blank name space. Only your supervisor should know to whom any particular code number (or rating) refers. They will then be mailed directly to the researcher. Since these tests will be entirely anonymous, it is hoped each worker will allow as true a reflection as possible.

Cooperation with Regional Offices, thus far excellent, is very much appreciated. Thank you."

Appendix 3. - Instructions to Simulation Groups.

"A research project which has involved the completion of five psychological tests by welfare workers in the larger regional offices, is presently underway.

The final phase of this project requires the collection of a smaller number of three of the tests used which are to be purposely completed in a faked manner. Workers in the smallest regional offices are being requested to complete these three tests, anonymously.

Specifically you are asked to complete the tests as you think would most guarantee your acceptance as an applying welfare worker with the knowledge that such test results were to be taken into consideration. In other words you are asked to purposely fake in a particular direction - even though, in a real application situation you personally might not distort your responses at all. Try to imagine you are the world's most mature, educated, warm, outgoing, stable, professional social worker and answer the questions accordingly.

The three tests to be completed are: (1) Maudsley Personality Inventory; (2) The California Psychological Inventory; and (3) The Strong Interest Test. These will be provided by your Supervisor. They should not take more than 2 hours to complete.

Thank you for your cooperation."

Appendix 4. - Full Names for Test Scale Abbreviations.

TEST	ABBREVI- ATION	FULL NAME
Valentine Reasoning Test	I D R	Induction Deduction Reasoning Total
Wonderlic Personnel Test	W	Wonderlic Total
Maudsley Personality Inventory	N E	Neuroticism Extraversion
California Psychological Inventory	Do	Dominance
	Cs	Capacity for status
	Sy	Sociability
	Sp	Social presence
	Sa	Self-acceptance
	Wb	Sense of well-being
	Re	Responsibility
	So	Socialization
	Sc	Self-control
	To	Tolerance
	Gi	Good impression
	Cm	Communality
	Ac	Achievement by conformity
	Ai	Achievement by independence
	Ie	Intellectual Efficiency
	Py	Psychological-mindedness
Strong Vocational Interest Blank for Men	Fx	Flexibility
	Fe	Femininity
	Art	Artist
	Psy	Psychologist
	Acht	Architect
	Phy	Physician
	Ost	Osteopath
	Den	Dentist
	Vet	Veterinarian

I
(Creative-
Scientific)

TEST	ABBREVI- ATION	GROUP	FULL NAME
	Mth		Mathematician
	Pht	II	Physicist
	Engr	(Physical	Engineer
	Chm	Sciences)	Chemist
	PM	III	Production Manager
	Fmr		Farmer
	Avr		Aviator
	Cpt		Carpenter
	Pri	IV	Printer
	MthT	(Technical)	Math-Science Teacher
	IAT		Industrial Arts Teacher
	AgT		Voc. Agriculture Teacher
	Pol		Policeman
Strong	For		Forest-service man
	YPh		YMCA Physical Director
Vocational	PD		Personnel Director
	PA	V	Public Administrator
Interest	YS	(Social-	YMCA Secretary
	SST	services)	Social Studies Teacher
Blank for	SS		School Superintendent
	SW		Social Worker
Men (Cont)	Min		Minister
	Mus	VI	Musician
	CPA	VII	Certified Public Acctnt.
	SCP		Senior Cert. Pub. Acctnt.
	Acc		Accountant
	Off	VIII	Office Man
	PrA	(Professional-	Purchasing Agent
	Ban	clerical)	Banker
	Mor		Mortician
	Pha		Pharmacist
	SM	IX	Sales Manager
	REs	(Selling)	Real Estate Salesman
	LInS		Life Insurance Salesman
	Adv	X	Advertising Man
	Law	(Verbal-	Lawyer
	A/J	linguistic)	Author-Journalist
	Pres	XI	President - Mfg. Concern
	OL		Occupational Level
	MF		Masculinity-Femininity

TEST	ABBREVI - ATION	GROUP	FULL NAME
	Art		Artist
	Auth	I	Author
	Lib		Librarian
	ET	II	English Teacher
	SW		Social Worker
	Psy	III	Psychologist
	Law	IV	Lawyer
	SST	V	Social Studies Teacher
	YS		YWCA Secretary
Strong	LInS	IV	Life Insurance Saleswoman
	Buy	VI	Buyer
Vocational	HsW		Housewife
	ElmT	VII	Elementary Teacher
Interest	Off		Office Worker
	Stgr	VIII	Stenographer
Blank for	BEdT		Business Educ. Teacher
	HEcT		Home Econ. Teacher
Women	Dtn	IX	Dietician
	PEdT	X	Physical Educ. Teacher
	OT		Occupational Therapist
	Nur	XI	Nurse
	PhT		Physical Therapist
	MthT		Math-Science Teacher
	Engr	XII	Engineer
	Den		Dentist
	LT	XIII	Laboratory Technician
	Phy		Physician
	MT		Music Teacher
	Mus	XIV	Musician
	MF		Masculinity-Femininity

Appendix 5. - Statistical Formulae.

FORMULAWHERE USED

$$\chi^2 = \sum \frac{(O-E)^2}{E} \quad \text{with 1 df.}$$

Part A

$$t = \frac{\bar{X}_H - \bar{X}_L}{S_{\bar{X}_H - \bar{X}_L}} \quad \text{where } S_{\bar{X}_H - \bar{X}_L} = \sqrt{\frac{S_H^2 + S_L^2}{N_H + N_L}} \quad \text{was}$$

appropriate since $N_H \neq N_L$ and High and Low means and variances were available as "by-products" when these two sub-groups' intercorrelation program cards were sorted out and rerun.

Part B
Part D

$$\chi^2 = \frac{N(AD-BC)^2}{(A+B)(C+D)(A+C)(B+D)}$$

Part B

$$r_{pbi} = \frac{\bar{X}_p - \bar{X}_q}{S_t} \sqrt{pq} \quad \text{with dichotomous}$$

Part C

categories assigned weights of 0 and 1.
(in computer computation)

The significance of r_{pbi} from zero was determined by calculating

Part C

$$t = r_{pbi} \sqrt{\frac{N-2}{1-r_{pbi}^2}} \quad \text{with df} = N-2$$

$$F = \frac{R^2}{1-R^2} \left(\frac{N-k-1}{k} \right) \quad \text{where } k = \text{number of independent predictors;}$$

Part C

$$\begin{aligned} \text{df} &= k \text{ (numerator)} \\ &= N-k-1 \text{ (denominator)} \end{aligned}$$

$$\eta_{yx}^2 = 1 - \frac{S_{ay}^2}{S_y^2} \quad \text{where } S_{ay}^2 = \sum \frac{(Y-\bar{Y})^2}{N}$$

Part C

$$F = \frac{(\eta^2 - r)(k-2)}{(1-\eta^2)(N-k)} \quad \text{where } k = 5 = \text{rows in bifrequency tables}$$

Part C

$$\begin{aligned} \text{df} &= k-2 \text{ (numerator)} \\ &= N-k \text{ (denominator)} \end{aligned}$$

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